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## CONTENTS AND DIGEST

**Subacute and Latent Infantile Scurvy: The Cardiorespiratory Syndrome (a New Sign). Alfred F. Hess, M.D., New York.....235**

Restatement of the symptoms of infantile scurvy caused by the use of pasteurized milk. Attention called to the cardiorespiratory syndrome and the involvement of the nervous system in the disease of marked and latent types.

**Astragalectomy (Whitman Operation) in Infantile Paralysis. W. R. MacAusland, M.D., Boston.....239**

Advantages of astragalectomy in giving stability, good motion and posture. Age when it may be done. Indications and operative technic. Literature.

Discussed by Drs. Kidner, Griffith, Freiberg, Jacobs, Ryerson, Campbell, Rugh, Hull, Francisco and MacAusland.

**Intestinal Obstruction Due to Ascaris Lumbricoides: Report of a Case. J. Maxime Perret, M.D., and H. Theodore Simon, M.D., New Orleans..244**

Cases reported in the literature. Account of a case.

**Mechanical Problems of Bronchoscopic and Esophagoscopic Foreign Body Extraction. Chevalier Jackson, M.D., Pittsburgh.....245**

Necessity of avoiding injury to the patient. Mechanical problems involved. Considerations deduced from 543 successful endoscopic removals of foreign bodies from the esophagus, larynx, trachea and bronchi.

**The Possibilities and Limitations of Nonsurgical Bronchoscopic Treatment. Robert F. Ridpath, M.D., Philadelphia .....251**

General conditions of patients requiring bronchoscopic examinations. Possibilities of diagnosis greater than by other means. Treatment of diseases and conditions by local means. Limitations.

**The Possibilities and Limitations of Suspension Laryngoscopy. Robert C. Lynch, M.D., New Orleans.....254**

A wider and better field of vision and for operation, not an apparatus for ordinary use, or to replace the throat mirror or bronchoscope.

Papers of Drs. Jackson, Ridpath and Lynch discussed by Drs. Chamberlin, Hubbard, Iglauer, Mosher, Skillern, Cott, Dixon, Keiper, Good, Cohen, Murphy, Butt, Ridpath, Jackson and Buck.

**Health Insurance and the Medical Profession. Alexander Lambert, M.D., New York.....257**

General statement of the substance of the health insurance bill proposed by the American Association for Labor Legislation, aimed at more effective measures of caring for the sick poor or for those of small means in the community. Its advantages as compared with the methods used abroad.

**A Consideration of the Serobiologic Reactions After Five Years of Observation. Charles R. Ball, M.D., St. Paul .....262**

The new science and symptomatology made possible by serobiology. Significance of the negative Wassermann. Importance of the spinal fluid reactions. The globulin and lymphocyte reactions.

**Mercurial Medication with Spinal Drainage. L. B. Pilsbury, M.D., Lincoln, Neb.....267**

**(Continued on next page)**

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CONTENTS AND DIGEST— *Concluded*


Pathologic identity of cerebrospinal syphilis. The cerebrospinal high pressure theory of so-called parasyphilitic diseases.

Papers of Drs. Schaller, Riggs and Hammes, Ball, and Pilsbury discussed by Drs. Barbat, Williams, Sterne, Grinker, Reasoner, Moody, Stoll, Lorenz, Ayer, Haskell, Woodbury, Moleen, Riggs, Schaller, Ball and Pilsbury.

**The Mastoid Operation of Ten Years Ago and of Today: Brief Estimate of the Advance as Measured by Practical Results. Philip D. Kerrison, M.D., New York.....273**

Growing respect for the soft parts in mastoid surgery. Critical review of methods and theories. Outline of a simple end operation.

Discussed by Drs. Canfield, Welty, Beck, Phillips and Kerrison.

**Renal Function in Nephritis. Robert L. I. Smith, M.D., Pasadena, Calif....278**

Report of a clinical study of renal function involving 150 determinations by one of the newer methods, by an index of urea excretion, which has been derived from Ambard's laws by McLean. Theory and description of method. Urea excretion under different conditions. Urea excretion and phenolsulphonephthalein.

**Observations on Immunity of Monkeys to Experimental Poliomyelitis. E. C. Rosenow, M.D., Rochester, Minn., E. B. Towne, M.D., Boston, and G. W. Wheeler, M.D., New York.....280**

Description of the organism and its characteristics. Animal experiments with the streptococcus.

**End-Results of the Treatment of Tuberculosis of the Spine, Hip, Knee and Ankle Joints: From the Records of the New York Orthopedic Dispensary and Hospital. Robert E. Humphries, M.D., and H. A. Durham, M.D., New York .....282**

Usual methods of treatment in ankle, knee and hip joint tuberculosis. Osteoplastic operations on the spine. Tabulated statement of cases, their duration and outcome.

Discussed by Drs. Ridlon, Sayre, Jacobs and Humphries.

**A Primipara at 46. Seeley Andrews, M.D., Minden, Neb.....285**

THERAPEUTICS

Disturbances of the Kidneys (Continued) .....285

EDITORIALS

Infectious Jaundice — Weil's Disease — Spirochaetosis Icterohaemorrhagica .....288

Demonstration of a spirochete by investigators in Japan and Germany.

Food Fat and Milk Fat.....289

Essential independence of quality of milk fat from food components.

Temperance Drinks and the Soda Fountain.....290

Comparative freedom of liquor saloons from sanitary regulations.

Dust and Its Dangers.....291

Analysis of dust from book shelves.

CURRENT COMMENT

**Compulsory Health Insurance.....292**

The conditions for medical service under social insurance.

**A Medical Commission, But No Medical Man on It.....292**

Personnel of the workmen's compensation commission.

**Poison the Fly.....292**

Hellebore for larvae, and salicylic acid for mature flies.

**Cheap Alum for Water Purification..293**

Reduction in cost through new process of manufacture.

MEDICAL NEWS

Alabama .....293
California .....293
Connecticut .....293
Illinois .....293
Kansas .....294
Maine .....294
Maryland .....294
Massachusetts .....294
Michigan .....295
Minnesota .....295
New York .....295
North Dakota .....295
Pennsylvania .....295
Texas .....295
Canada .....296
General .....296
Foreign .....297
War Notes .....297
London Letter .....298
Paris Letter .....298

MARRIAGES 299

DEATHS 300

PROPAGANDA FOR REFORM 302

North Carolina to the Fore.
Pil. Cascara Compound-Robins
Casta-Flora.

CORRESPONDENCE 304

A Standard Size for Medical Books.
Yellow Petrolatum—Vesicorectal Reflex—The Treatment of Intestinal Stasis.
Request for Report of Results of Percy Method in Treatment of Uterine Carcinoma.

QUERIES AND MINOR NOTES 304

The Relief of Constipation.
Effect on Ether and Chloroform of Exposure to the Air.
Lafayette Mixture.
Action of Strychnin on Blood Pressure.

MEDICAL EDUCATION AND STATE BOARDS OF REGISTRATION

Coming Examinations — Connecticut July Report — Connecticut Homeopathic November Report — Nevada November Report ....305

SOCIAL MEDICINE, MEDICAL ECONOMICS AND MISCELLANY

Combating Venereal Diseases .....306

MEDICOLEGAL

Liability Where Two Physicians are Employed; Minimizing Damages — Contract of Hospital to Care for Infant Received Along With Mother .....307

SOCIETY PROCEEDINGS 308

Coming Meetings.
Southern Surgical and Gynecological Association.

CURRENT MEDICAL LITERATURE

American Medical Journals

Congenital Familial Cyanosis — Phenol Excretion in Urine of Infants — Chemistry of Spinal Fluid of Children .....309

Sodium Chlorid Exeretion — Yeast and Wheat Embryo Infantile Scurvy—Glucose-Nitrogen Ratio in Diabetes Mellitus — Starvation Treatment of Diabetes — Hyperglycemia in Diabetes — Fatal Case of Diabetes Mellitus —Toxemias of Pregnancy — Circulatory Failure in Acute Infections .....310

Heart Disease in Infancy and Childhood — Goodman's "Autoserum" Treatment of Chorea .....311

Antigenic Properties of Different Strains of Bacillus Typhosus — Hecht Complement Fixation Reaction — Methods of Performing "Daily Titrations" for Wassermann Reaction — Postmortem Wassermann Reactions— Von Dungern's Indigo Test for Syphilis — Wassermann Test for Syphilis—Anaphylatoxin Theory of Anaphylaxis .....312

Toxic Effect of Emetin Hydrochlorid — Bacterial Cultures of Human Spleens Removed by Surgical Operation .....313

Foreign Medical Journals

Influence of Antiseptics on Leukocytes—Home-Made Bread Substitutes for Diabetic Patients —Tuberculin in Treatment of Advanced Tuberculosis — Antiseptic Treatment of Wounds .....314

Dyspeptic Diarrhea — Meningeal Reactions in Syphilitics — Antitetanus Serum in Treatment of Tetanus—Entero-Anastomosis Without Exposing the Lumen — Hemorrhagic Jaundice .....315

Operations on Nerves in Dogs—Welfare Work for Children with Ear Disease — Regular Fluctuations of the Temperature — Venesection Plus Autoserotherapy — To Expel the Blood from the Limb — Salvarsan in Pernicious Anemia .....316

Nervous Weakness of the Heart — Werlhof's Disease and Essential Deficiency in Thrombogen — Unusual Localizations of Paratyphoid Infection — The Nitrogen, Cholin and Cholesterin Content of the Cerebrospinal Fluid—Minor Long Continued Fevers ..317

Identity of Peruvian Verruga and Oroya Fever —Postoperative Acute Dilatation of the Stomach — Dermal Leishmaniasis — Dosage of Urea in the Blood Serum — Emergency Dilatation of Uterine Cervix — Balneotherapy for Enlarged Prostate .....318

The First Dentition—Periodic Leukocytosis— Snapping Hip — Indigo Red in the Urine— Hospital Treatment in Prophylaxis of Scarlet Fever .....319

Traumatic Rupture of Internal Organs — Sodium Citrate in Treatment of Glaucoma — Spontaneous Pneumothorax in Pulmonary Tuberculosis — Hydrosalpinx — Ovarian Fibromas and Sarcomas — Rupture of the Spleen — Phototherapy of Tuberculosis in Danish Sanatoriums — Determination of Sugar Content of the Blood .....320


TONICS AND SEDATIVES.....Adv. Page 20

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# The Journal of the American Medical Association

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## SUBACUTE AND LATENT INFANTILE SCURVY

### THE CARDIORESPIRATORY SYNDROME (A NEW SIGN)


ALFRED F. HESS, M.D.

Professor of Clinical Pediatrics, University and Bellevue Hospital Medical College

NEW YORK


In previous papers on this subject[1] it has been established, I believe, that infantile scurvy may be brought about by a diet of pasteurized milk. An investigation of this question seemed not only indicated but also urgent in view of the increasingly widespread use of pasteurized milk, and of the fact that the National Commission on Milk Standards, a committee of the highest authority, has expressed the opinion that the heating of milk, as carried out in the course of pasteurization, does not destroy its enzymes or other chemical constituents.[2] As stated, my experience did not coincide with this opinion. On the contrary, I found that when the use of orange juice was discontinued in the dietary of a group of infants who were being fed on milk which had been subjected to a temperature of 140 F. for thirty minutes, some of them in the course of from two to four months showed signs of mild scurvy. That these manifestations were in reality scorbutic, and furthermore that they were attributable to the pasteurized milk, was proved by their rapid disappearance when orange juice was again added to the dietary, or when raw milk was substituted for the heated milk. The practical deduction from these observations is not, however, that pasteurization should be discouraged, or that milk treated in this way is objectionable, but merely that the important fact should be recognized that it is not a complete food for infants and that it is imperative to give an antiscorbutic substance in addition.[3] When this prophylactic measure is observed, fresh pasteurized milk becomes a most valuable food for infants, and is to be highly recommended on account of the security which it affords. It should be understood that my position in regard to the effect of pasteurized milk is not based on mere refinements of diagnosis, or on rare and exceptional cases, such as are of interest only to the specialist. On the contrary, I believe that scurvy brought about in this way is not at all infrequent, that it is indeed the most common cause of scurvy, and that it induces a type of the disorder which generally passes unrecognized. If we are to diagnose scurvy promptly, and not overlook its more subtle manifestations, the classic textbook description of this disturbance must be supplanted by one which is less crude and more faithful to true clinical conditions.

The stereotyped picture of infantile scurvy, and the one which this term commonly suggests, is that of a poorly nourished infant, lying with one or both thighs flexed on the abdomen, who, on closer examination, is found to have bleeding, spongy gums, and enlargement of the lower end of the femur, associated with exquisite tenderness. This is the syndrome which the medical student carries away to guide him in his everyday practice. It is the florid type, encountered only occasionally, and requiring merely a routine physical examination for recognition. The commoner form, which may be termed "subacute infantile scurvy," is composed of a large number of symptoms which are inconclusive individually, and may well escape a correct interpretation. The affected baby is usually in the second half of the first year of life, and does not gain or gains but slightly for weeks. It may be fairly well nourished, but is pale, with perhaps slight edema of the eyelids. The mother or nurse complains that the child is irritable and peevish, and that the appetite has diminished. The gums may show merely a lividity or slight peridental hemorrhage, which on subsequent examination is no longer visible, and may have consisted merely of a rim of crimson edging the borders of the upper gum, or perhaps have been situated behind the upper incisor, as Still[4] pointed out. On closer examination it may be observed that the papillae of the tip of the tongue are markedly congested, and that a petechial spot is to be seen on its frenum, on the palpebral conjunctiva, or here and there on the surface of the body, more especially where there are erosions, eczema or other skin lesions.[5] Attention may be called to tenderness of the lower thighs, which in some instances is definite, in others so ill defined and fleeting that it is impossible to feel convinced of its significance or even reality. There may be slight edema over the crests of the tibia, of the kind which does not

1. Hess, A. F., and Fish, Mildred: Infantile Scurvy: The Blood, the Blood Vessels and the Diet, Am. Jour. Dis. Child, December, 1914, p. 386. Hess, A. F.: Infantile Scurvy, II, A New Aspect of the Symptomatology, Pathology and Diet, THE JOURNAL A. M. A., September 18, 1915, p. 1003; Infantile Scurvy, III, Its Influence on Growth (Length and Weight), Am. Jour. Dis. Child, August, 1916, p. 152; Infantile Scurvy, IV, The Therapeutic Value of Yeast and of Wheat Embryo, Am. Jour. Dis. Child., January 1917, p. 98.

2. Report of the Commission on Milk Standards, appointed by the New York Milk Committee, Pub. Health Rep., May 10, 1912.

3. In referring to pasteurized milk as inducing scurvy, I do not wish to state that the heating is necessarily altogether responsible for this result. There may well be other contributory factors, such as the staleness of the milk.

4. Still, G. E.: Common Disorders and Diseases of Childhood, London, 1909, p. 105.

5. The extent of the petechiae and other hemorrhages in infantile scurvy depends on the individual predisposition of the child in this regard. As has been pointed out, this sign is due mainly to a weakness of the vessel wall, and not to an alteration in the coagulability of the blood. In infants who show an instability of the capillaries, as manifested by the "capillary resistance test," the disorder is apt to be characterized clinically by the various typical signs of hemorrhage.

pit on pressure. The knee jerks are almost always markedly exaggerated. The urine is found to be normal or to contain some albumin and red and white blood cells.

These symptoms do not constitute a rigid entity, but are subject to manifold variations. The syndrome may be rendered less typical and more difficult by the

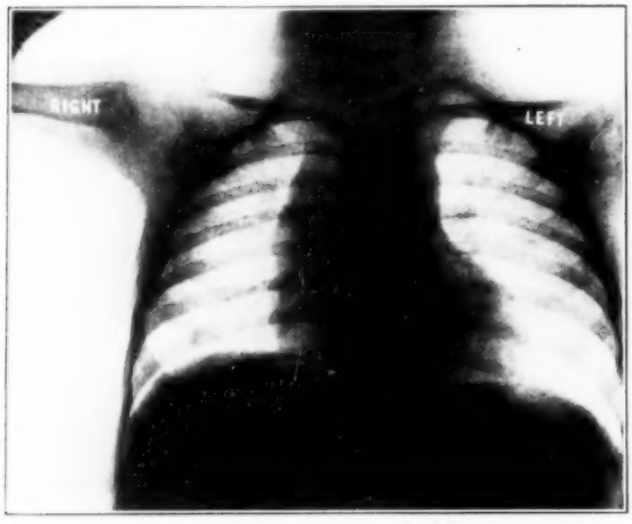


Fig. 1.—Enlargement of heart, especially to the right, and broad shadow at the site of the large vessels.

fact that the infant has gained steadily rather than lost in weight, as is sometimes the case, particularly if the food has been insufficient in quantity during the first few months of life. There are other symptoms worthy of note, especially those which have been disclosed by the aid of the Roentgen ray. As described and portrayed elsewhere, the heart may be involved in infantile scurvy; this may be evident to ordinary physical examination, as enlargement, especially to the right, and may be accompanied by dulness and diminished breathing posteriorly at the bases of the lungs. This type of enlargement is often well shown in roentgenograms, as well as a marked broadening at the base of the heart, at the site of the large vessels (Figs. 1 and 2). As far as I know, attention has never been called to the latter phenomenon, and it will be referred to below in another connection. Roentgenograms of the bones may show the "white line" at the epiphyses first described by Fraenkel, or a thickening of the periosteum. However, too great reliance should not be placed on these signs in making an early diagnosis of this disorder, as neither are invariably present.

An example of a case of subacute scurvy, which in many respects is typical, is the following:

CASE 1.—I. F., girl, was admitted when 3 months old, weighing somewhat over 8 pounds. She was given Schloss milk, 4 ounces and then 5 ounces every three hours, and did well, weighing 11¼ pounds two months later. As she failed to gain for some weeks, although 6 ounces of food were given, it was thought that this might be due to the fact that she was getting pasteurized milk and that she had never received an antiscorbutic. Autolyzed yeast was tried as a prophylactic antiscorbutic, as has been described elsewhere[1] in detail. This failed to cause a gain. When, however, orange juice was substituted for the yeast, a prompt growth reaction resulted, a gain of 1¼ pounds in four weeks. Accompanying this lack of gain in weight there were many of the other symptoms enumerated above: irritability, pallor, slight tenderness of the lower ends of the femora, albumin and a few red and white cells in the urine. The pulse or heart beat was frequently over 150, and the respirations 60 (Fig. 3). The diagnosis of subacute scurvy was substantiated by the prompt subsidence of all symptoms when orange juice was given.

Among the symptoms mentioned in this case are a pulse of over 150 and respirations of 60 a minute. These phenomena were noted in several instances before their significance and intimate relationship with infantile scurvy was realized. They were then made the subject of closer observation and were found to occur frequently as early signs of this disorder. In one instance of subacute scurvy the pulse could not be counted, and the heart beat was found to be 200 to the minute. It should not be thought that this must have been a severe case; on the contrary, the baby was in good condition, did not appear ill, and merely showed some tenderness of the thighs, and red blood cells in the urine as other evidences of its ailment. When given orange juice there was a remarkable response in gain in weight and a disappearance of the other symptoms. The rapidity of respirations is perhaps a more delicate indicator of this disturbance than the pulse, and has been found to be markedly affected when the latter was merely slightly increased in rate. For example, in one instance the respirations were 64, 60 and 64 on three successive days, while the pulse was 124, 141 and 136: in other words, there was a 2:1 instead of the normal 4:1 pulse-respiration ratio. The accompanying charts (Figs. 3 and 4) illustrate the phenomenon in all its details better than a verbal description. There are several points in connection with them to which I wish to call especial attention. First and foremost is a reaction which is evident from a glance at either chart, the sharp drop in the pulse and in the respiration rate when orange juice was given. This is the essence of the phenomenon; a response which proves that it is dependent on and the result of the scorbutic condition. In Figure 4 it will be noted that after orange juice had brought about this reaction,

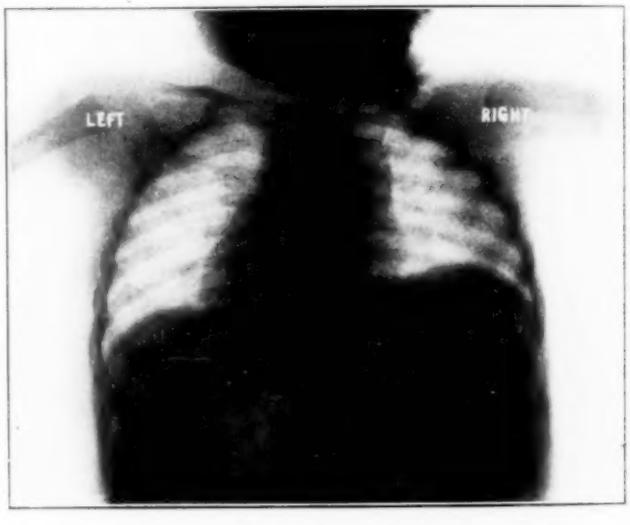


Fig. 2.—Broad shadow at the site of the large vessels.

potato was substituted and was able to enhance the effect still further. It did this not only as regards the pulse-respiration syndrome, but also as regards the other scorbutic manifestations. This is the case which was cited recently[1] to raise the question as to possible differences between the various antiscorbutics, and from which the inference was drawn that they are not all exactly alike in their chemical nature or therapeutic action. My previous opinion on this question is further

strengthened by the secondary beneficial results which may follow the administration of vegetables in cases of scurvy in which orange juice has been taken for some weeks (Fig. 5). Returning to a study of Figures 3 and 4, we note that on giving orange juice, not only were the pulse and the respiration affected, but the temperature as well. It would seem as if this disorder incited a mild febrile reaction, which yielded promptly to antiscorbutic treatment and should there-

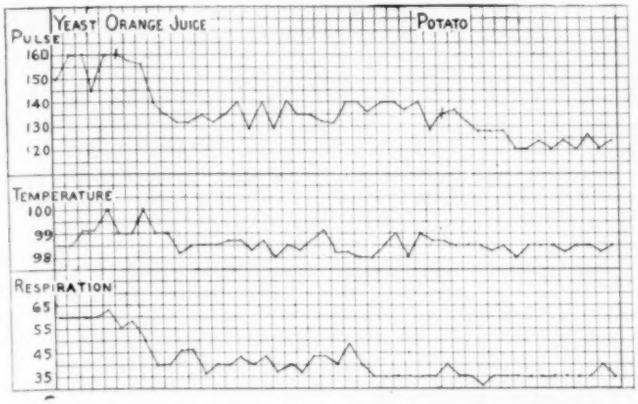


Fig. 3 (Case 1).—Chart of I. F., aged 7 months, showing prompt effect on pulse, respiration and temperature of substitution of orange juice (30 c.c.) for autolyzed yeast (30 c.c.) and a further response when the former was replaced by potato (15 gm.).

fore be regarded as scorbutic in nature, in other words, as a *scorbutic fever.*

There is little to be stated in addition concerning the type of the tachycardia. The pulse is regular and moderately strong, and its rapidity is heightened unduly by the incidence of minor intercurrent infections. Cardiographic tracings, which were kindly carried out by Dr. B. S. Oppenheimer, showed a simple tachycardia, such as is common to exophthalmic goiter, with the T-wave exceptionally tall in some tracings (Fig. 6).

The increase in respirations is a polypnea rather than a dyspnea. The baby lies apparently in comfort while the respirations number 60 a minute. It is probably due to this lack of visible disturbance, this superficial appearance of normal cardiac and respiratory functioning, that these signs have escaped observation. In the comprehensive report of the American Pediatric Society,[6] there is no reference to involvement of heart or lungs.

Without doubt this cardiorespiratory syndrome is occasioned by a disturbance of the nervous mechanism controlling this dual system. In view of the fact that the action of the lungs as well as that of the heart is affected, there can be no question of the symptoms being attributable to a primary muscular alteration. Nor can they be ascribed to anemia. In the first paper of this series by Hess and Fish,[1] it was shown that infantile scurvy is generally accompanied by only a mild grade of secondary anemia. Furthermore, observations carried out to control this point have demonstrated that poorly nourished infants with more marked anemia have approximately a normal cardiac and respiratory rate. Moreover, the fact that these symptoms yield precipitously in forty-eight hours to antiscorbutic diet does away with all questions of their dependence on malnutrition or anemia. The phenomenon is clearly neurotic in nature and probably due to an involvement of the pneumogastric nerves.

6. American Pediatric Society Committee: Arch. Pediat., 1898, **15**, 481.

We have here, therefore, one more link of evidence that the nervous system is involved in infantile scurvy, and that this disorder should no longer be regarded as affecting only the bones and the blood vessels, or as one characterized clinically by subperiosteal swellings and hemorrhages in various parts of the body. Elsewhere[1] I have laid stress on the fact that the optic nerve may show changes, and that it is quite common to find the knee reflexes exaggerated. The significance of showing that infantile scurvy possesses an aspect which requires it to be regarded as a disease of the nervous system is interesting in itself, but gains far greater importance when we consider that this association brings it into closer relationship with beriberi, adult scurvy, pellagra and the ever increasing group of disorders which are classed as "deficiency diseases," or, according to Funk, "avitaminosen." In beriberi, as well as in infantile scurvy, there is enlargement of the heart, especially of the right heart,[7] and there are tachycardia, polypnea, and generally increased knee jerks. In adult scurvy we find dyspnea, palpitation and hyperesthesia frequently described. Attention has been drawn, from time to time, to the close clinical relationship between adult scurvy and beriberi by various observers who have noted cases of these disorders manifesting themselves under apparently identical conditions. Only recently this was once more reported by a military surgeon in relation to the troops in Mesopotamia and the Dardanelles.[8] In tracing relationship with pellagra, we are treading on disputed ground. I would draw attention to the fact, however, that in this disease the pulse is frequently rapid,[9] and also that pathologic and even clinical changes have been found in the central nervous system.[10] As is well known, skin lesions are also one of the characteristic signs of pellagra. It is therefore worthy of comment that in infantile scurvy, redness of the skin is not infrequently associated with edema over the tibia; this was the case in sixty-nine of the 190 instances of edema

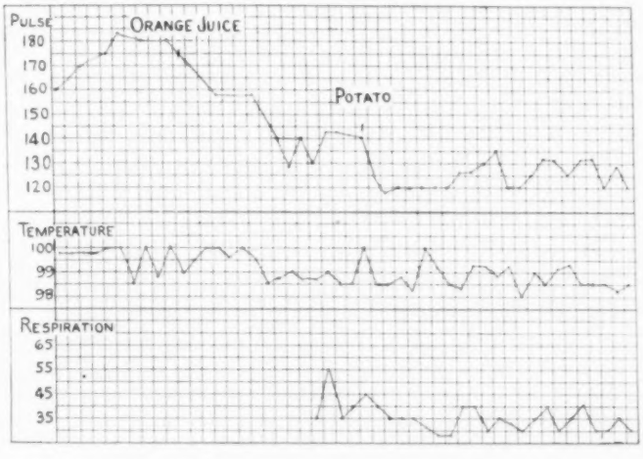


Fig. 4.—Chart of J. G., aged 9 months, showing marked effect of orange juice (30 c.c.) on the polypnea, and accessory effect of potato (15 gm.). The respirations were not recorded in the early stage of this case.

7. In a recent report of Roentgen-ray examinations of Russian captives, suffering from beriberi and disorders resembling beriberi, P. Reinhard (Arch. f. Schiffs- u. Tropen-Hyg., 1916, No. 1, p. 20), states that he found primary dilatation of the shadow of the large vessels, especially of the pulmonary region. This is similar to the roentgenographic picture which I have described above occurring in infantile scurvy.

8. Willcox, W. H.: Beriberi, with Special Reference to Prophylaxis and Treatment, Lancet, London, 1916, **1**, 553.

9. Ridlon, J. R.: Pellagra: The Value of the Dietary Treatment of the Disease, Pub. Health Rep., 1916, **31**, 1979.

10. Koch, M. L., and Voegtlin, C.: Bull. 103, Hyg. Lab., U. S. P. H. S., February, 1916.

collected by the American Pediatric Society.[6] It is also of interest in this connection, that, as has been pointed out,[1] there is an eczema which develops in infants in the course of scurvy which yields promptly to antiscorbutic treatment.

It is evident that previous to the onset of scurvy there must be a period during which the equilibrium of the essential substance or "vitamin" is no longer

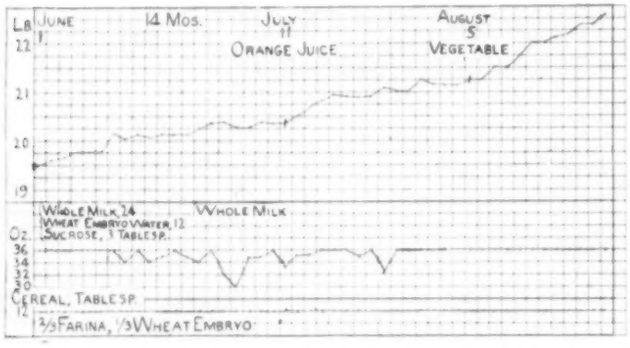


Fig. 5 (Case 3).—Latent scurvy in older infant disclosed by therapeutic test; child had received both wheat embryo and watery extract of the embryo.

being maintained, but, on the contrary, a negative balance is in progress. Although at the onset this abnormal state of metabolism is of no clinical moment, if it continues it gradually brings about a condition of "latent scurvy." This nutritional state may constitute merely an introductory phase to the occurrence of subacute or of florid scurvy. It may, however, advance no further; the negative balance may be slight, and the supply of "vitamin" sufficiently great to maintain the body in the latent scorbutic condition for months, until, quite unintentionally, it is brought into equilibrium by the addition of some antiscorbutic food stuff to the dietary. Figure 7 is reproduced to illustrate how latent scurvy may remain latent; how it may gradually merge into subacute scurvy and develop no further, and, finally, how the typical gradation may ensue, of latent, subacute and florid infantile scurvy.

The diagnosis of latent scurvy is based mainly on the reaction to specific therapy, and on the marked improvement when orange juice, potato or other antiscorbutic food is taken. The symptoms themselves are suggestive but do not permit a definite diagnosis. In my experience the course has been as follows: The infant generally has been from 6 to 9 months of age, and has been fed for a considerable period on pas-

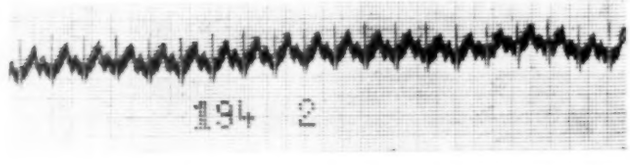


Fig. 6.—Electrocardiogram in case showing cardiorespiratory syndrome.

teurized milk; this may or may not have been prepared with cereal decoction, nor did it seem material whether or not gruels also had been given. When about 6 months of age, the baby ceased to thrive, to gain satisfactorily, to look strong and to eat as we should desire. The most careful physical examination has failed to solve the difficulty. On the other hand, the history of a diet of heated milk and lack of antiscorbutic food, considered in conjunction with the pallor and lack of appetite, the increased knee jerks, and perhaps the cardiorespiratory syndrome, has awakened suspicion and led us to prescribe orange juice, with a view to diagnosis as well as treatment. The result frequently has been magical. The following case, the weight chart of which is reproduced (Fig. 8), is fairly typical of this abnormal nutritional state:

CASE 2.—H. C., boy, born Dec. 15, 1915, was artificially fed until admitted to the institution, Jan. 4, 1916, when he weighed 6½ pounds. He was given 28 ounces of Schloss milk a day. (This was prepared from pasteurized milk which was not heated a second time. It contains per liter [quart] 140 c.c. of whole milk, 140 c.c. of 20 per cent. cream, 50 gm. of dextrimaltose, 5 gm. of plasmon, 0.2 gm. of potassium chlorate, and 700 c.c. of water.) By March 1 he weighed 9 pounds, and gained three quarters of a pound more in the course of this month. During April he gained only 4 ounces. As will be seen from the chart, there was almost a cessation of gain from April 10 to May 3, although yeast was added to the diet. May 2, orange juice was given. The weight advanced at once, the general appearance quickly improved, and an eczematous condition of the face rapidly healed. It will be noted from the chart that all this occurred, although the intake of food remained the same.

*Epicrisis: a baby 4 months old with latent scurvy, which had existed since or even before it was 3 months of age.*

This disorder may occur in older infants, under similar dietary conditions. The following case relates to a well nourished, active, contented baby over a

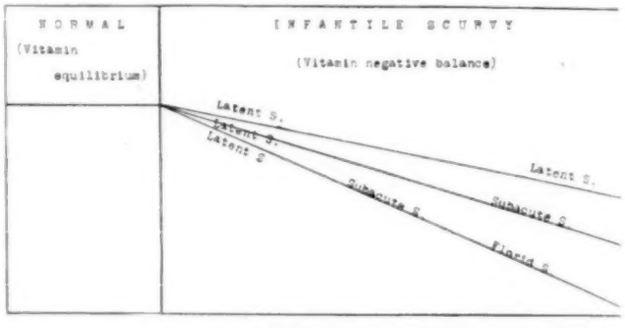


Fig. 7.—Various courses which the scorbutic condition may follow, according to the degree of negative balance of vitamins.

year old. A diagnosis was impossible from the signs and symptoms, but was suggested by previous experience with the results of a prolonged diet of heated milk (Fig. 5).

CASE 3.—E. F., girl, admitted when 4 months old, weighing 9½ pounds, had never been nursed. She gained on a mixture of two-thirds milk, and was given orange juice when 6 months of age, and vegetable a month later. Feb. 1, 1916, when she was 9½ months old and weighed 16½ pounds, orange juice and vegetable were discontinued, and a cereal containing wheat embryo (germ meal) substituted. She had grip, associated with otitis and adenitis, during the latter part of February and again in March and the early part of April. By May 14, however, she weighed 19 pounds and showed no scorbutic signs whatever. About this time the watery extract of the germ meal was added to the diet in place of barley water (12 ounces a day). During June the gain fell off markedly, but the baby appeared well otherwise. Whole milk was ordered to offset this in the beginning of July, but did not bring about a gain. Then orange juice was added. Figure 5 shows the prompt response, which unfortunately was soon interrupted by another grip attack. Later vegetable was substituted for orange juice, and occassioned an increase in weight which lasted for many weeks.

This condition of latent scurvy is probably the commonest type of the disorder, especiallly in the larger cities where almost the entire milk supply for infants is

pasteurized, and it is frequently passed over unrecognized. Most infants happily are given orange juice by the time they are 6 months of age, and may receive a small amount of vegetable or potato before they are much older, so that they are protected from serious harm in this way. But there is no doubt a considerable number, including those who are peculiarly susceptible, who pass through the state of latent scurvy.

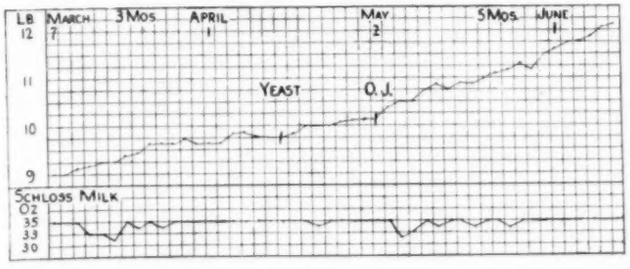


Fig. 8 (Case 2).—Latent Scurvy: Infant under 4 months of age responding promptly to orange juice (previous failure of autolyzed yeast); quantity and composition of food unchanged throughout.

If these cases were included in the computations, we should not class infantile scurvy as a disorder which very rarely occurs during the first six months of life, nor would an experienced observer, such as Still,[4] state that "in no case did scurvy begin before the age of 5 months." An instance has just been cited occuring considerably before this age. The lesson taught by these observations is not that fresh milk for infant feeding should not be pasteurized, but that the administration of antiscorbutics should be begun earlier. There is no reason based on clinical experience which contraindicates the giving of a teaspoonful of orange juice at 1 month to bottle fed babies, and of gradually increasing this amount to a tablespoonful at the age of 3 months. As has been repeatedly shown, there is, on the contrary, a valid reason for urging the adoption of a prophylactic measure of this kind for infants fed on the pasteurized milk as supplied at present.

### CONCLUSIONS

An exclusive diet of pasteurized milk will frequently induce scurvy in infants. It should be well understood, however, that this danger can readily be averted by the mere addition of an antiscorbutic food to the dietary.

Probably a large proportion of infantile scurvy is occasioned at present by our pasteurized milk. This scurvy is usually not of the classic, florid type. It is less pronounced and obvious, and is consequently the form which is least often recognized. This type may be termed "subacute infantile scurvy" and is distinguished by a group of incompletely developed symptoms which disappear quickly when orange juice or other specific therapy is given.

Another type found to be occasioned by this milk is "latent scurvy." This constitutes a state of malnutrition which develops slowly as the result of a negative balance of "vitamins." It can rarely be definitely diagnosed, except by the sharp recession of symptoms —stationary weight, pallor, poor appetite, etc—following the administration of an antiscorbutic.

We should no longer regard infantile scurvy, from either a pathologic or a clinical point of view, as a disorder affecting merely the blood vessels and the bones. Roentgenograms show that the heart, especially the right heart, is frequently enlarged, and that there is a broadening of the shadow at the base of the heart, at the site of the great vessels. Furthermore, this disorder is associated frequently, even in the mild forms, with a cardiorespiratory disturbance characterized by a very rapid pulse, and respirations which may rise as high as 60 a minute (polypnea). Both of these signs disappear promptly when orange juice or potato is given. This cardiorespiratory syndrome is due to an involvement of the nerves. Considered in conjunction with the changes of the optic disk, previously described, and the increasing of the knee reflexes, it is evident that the nervous system is extensively involved in infantile scurvy. This fact gains added interest in view of the marked involvement of the nervous tissue in other so-called "deficiency diseases," such as adult scurvy, beriberi and pellagra.

16 West Eighty-Sixth Street.

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## ASTRAGALECTOMY (WHITMAN OPERATION) IN INFANTILE PARALYSIS*

W. R. MACAUSLAND, M.D.
Surgeon-in-Chief, Orthopedic Department, Carney Hospital
BOSTON

It is not my object to discuss more than in a general way the various operative procedures in the paralyzed foot, but rather to emphasize the value of an operation which has stood the test of time; and unlike tendon transplantation, silk ligaments, etc., has been found practical, efficient and permanent in combating the instability so frequently seen in the paralyzed foot. It seems to the writer that except for one or two possible conditions in the paralyzed foot, transplantation should be discarded in favor of a procedure giving permanent results in the hands of the surgeon. As one compares the results in a series of cases some years after operation, it seems quite remarkable that transplantation of tendons and the use of silk ligaments still persist.

Infantile paralysis most frequently leaves its mark in the muscles of the foot where varying degrees of paralysis persist from a mild weakness of one group or a paralysis of one group to a total paralysis of the entire muscle strength below the knee. The extent of the disability, however, only rarely coincides with the extent of the paralysis.

Weakness, instability of the foot and deformities follow paralysis of one group as frequently as they

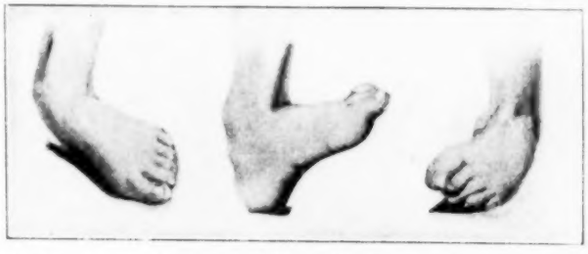

Fig. 1.—Three of the more common deformities in the partly paralyzed foot.

follow paralysis of all the muscles. It is the failure to recognize this fact that tempts the surgeon to use such insufficient means as transplantation and silk ligaments in order to combat deformity in those cases with slight loss of muscle power. The normal foot is balanced by muscles working in perfect coordination, assisted by

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

ligaments which check extremes of motion. To expect sufficient restoration of balance following transplantation is illogical from a mechanical and physiologic point of view, and in the experience of the writer not based on careful and prolonged clinical observation.

Our first duty, of course, is to foresee and prevent structural deformity, thereby favoring regeneration and recovery of power.

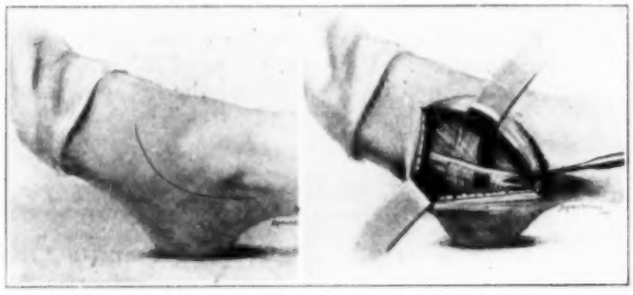

Fig. 2.—Astragalectomy — the Whitman operation: On left, line of incision. On right, tendon of peroneus longus exposed; tendon of peroneus brevis being exposed.

If this recovery does not take place, then we arrive at the point where operative interference must be considered or the patient condemned to a brace for permanent support. Here the question arises as to the class of cases in which surgical interference is indicated. We must all believe that operative interference should be delayed as long as there is a possibility of a return of power, e. g., about one and a half to two years following the initial attack. In children, in whom deformity may usually be prevented, my experience leads me to wait longer if the age of 6 or 7 has not been reached. In the presence of deformity not easily correctable by manipulation, this age limit may be lowered a year to hasten good locomotion.

What operation shall we choose? During the past six years I have used astragalectomy as devised by Dr. Royal Whitman[1] in almost all of the deficiencies following infantile paralysis affecting the leg. Altogether my series comprises 135 cases, a sufficient number to warrant the formation of definite opinions concerning its value as an operation. In short, I may state that it has come to replace the commoner operations of transplantation, silk ligaments and allied operations. Astragalectomy gives stability, which is not in my experience obtained by the other procedures, and in addition preserves sufficient motion for good function of the ankle. Arthrodesis when successful stiffens the joint and an awkward gait results.

Fig. 3.—Astragalectomy — the Whitman operation: On left, peroneal tendons sutured and divided. On right, external lateral ligament divided; tibio-astragaloid ligament divided; interosseus and external talocalcaneal ligaments being divided.

1. Whitman: Am. Jour. Med. Sc., 1901, **122**, 593; Am. Jour. Orthop. Surg., 1910-1911, **13**, 137; Am. Surg., 1911, **54**, 860.

*Age.*—Astragalectomy can be done at any age following a period of two years after the original paralysis, but if possible should be reserved until the child is 6 or 8 years old. If, however, deformity is not being prevented by apparatus and if the limp is more than the extent of the paralysis warrants, then I should not wait for this age; for atrophy and shortening go hand in hand with the severity of the deformity and the limp, not with the extent of the paralysis. In the period between 6 and 16 years of age the most satisfactory results are obtainable. We have done the operation later but find that more sensitiveness and pain are liable to follow, and the results, in spite of good stability, motion and a good posture, are not quite as satisfactory as when done early.

*Indications.*—The conditions in the foot for which this operation may be done with benefit are many. Probably the most striking results follow its use in the deformity of calcaneovalgus, for which it was originally planned (Fig. 1). Here with the shifting of the tibial weight forward, and the transplantation of the peronei into the Achilles, a most striking functional result is obtained. But its use cannot be limited to this alone. It gives excellent and standard results in all foot conditions — even where only one muscle is paralyzed.

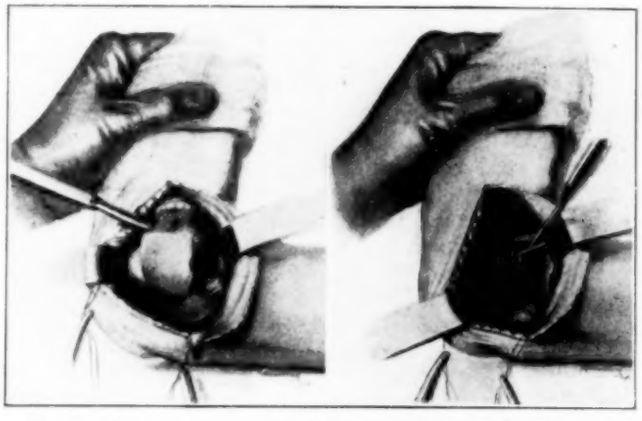

Fig. 4.—Astragalectomy — the Whitman operation: On left, dislocation of astragalus by strong inversion of foot. Note heavy dissector under neck by which astragalus is pried loose head first. On right, widening tibia-fibular articulation by removal of thin slice of cartilage from internal malleolus.

*Operative Technic* (Figs. 2-10).—Here as in other joint operations the asepsis should be guarded carefully and manipulation should be gentle. A curved or L-shaped incision is made around the external malleolus, tending forward over the head of the astragalus. The upper flap is then dissected upward, exposing the tendons of the peroneus longus and brevis, which are then dissected free and severed just at the fibular tip. The ends are caught in No. 2 catgut sutures and retracted.

An incision is then made through the external ligaments around the astragalus, using especial care about the head of the astragalus. The foot is strongly inverted. Then by placing a blunt dissector under the neck of the astragalus, the bone is pried out of position head first, and removed. At once the ease of displacing the foot backward will be noticed, but in order to insure a good joint a certain amount of modeling must be done.

The internal lateral ligament is dissected upward from the internal malleolus; if necessary, a strip of cartilage is removed from both tips to span the

scaphoid and cuboid; a small piece is excised from the side of the scaphoid and cuboid to form pockets for the malleoli. The foot is then displaced backward and held carefully in this position to insure the proper relations in the new joint. A moderate equinovalgus gives stability while holding. The peronei are disposed of by suture to the Achilles tendon, by tendon fixation or by resuture to the distal ends of the tendons of the peronei, as indicated in the given case. The skin is closed with catgut and plaster applied from the toes to midthigh with the knee flexed and the foot in equinovalgus. The leg is kept elevated for a period of ten days, after which crutches may be used. The first change of cast takes place in three or four weeks, at which time the equinus is corrected to a right angle in cases of quadriceps paralysis or left in 5 to 8 degrees equinus where the quadriceps is present. Valgus should persist throughout the treatment.

A leather shoe (Fig. 11) is then put over the plaster and the child allowed to walk, changing the plaster as necessary for five to six months. Following its removal a shoe with a lift on the outer side of the sole is used. A one-half or three-quarter inch cork lift under the heel will compensate for the shortening of the leg and improve the gait. Circulation improves

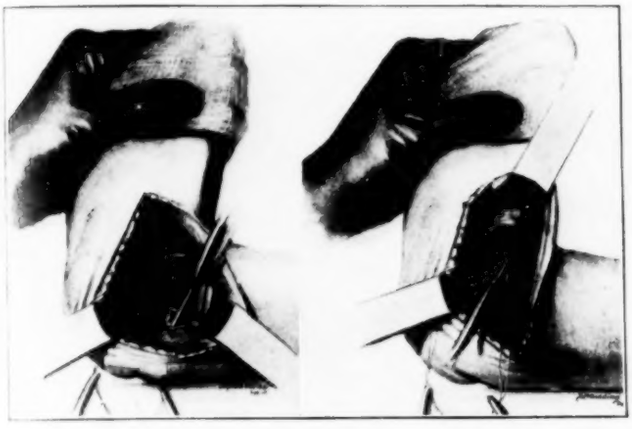

Fig. 5.—Astragalectomy — the Whitman operation: On left, widening the tibia-fibula articulation by removal of thin slice of cartilage from one or both; the internal lateral ligament has been dissected up to sharpen the malleolus. On right, the new articulation for internal malleolus. Note removal of inner one fourth to one sixth from inner side of scaphoid, thus forming pocket for sharpened internal malleolus.

rapidly with the return of good function and loss of growth ceases, the paralyzed leg beginning to grow at a rate equal to that of the well side.

*Conclusion.*—The results obtained with astragalectomy have led me to discard, except in the rare cases, all other procedures.

## LITERATURE

Various methods for remedying the condition have been devised. Amputation of the foot in cases of severe deformity is advocated by Watson.[2] I know of no other report on this operation. Lange's silk ligaments are advocated by many authors, among whom are Allison,[3] Bradford,[4] Barton and Plummer,[5] and Lovett.[6] Rich[7] says that they are of use in joints where there is no external irritation, as there is in the ankles from shoes. Here he advocates capsule tucking. Nerve grafting is advocated by Spitzi and others. The general opinion has been summed up by Feiss,[8] who says there is no experimental evidence to justify its use in paralytic cases. Tendon transplantation has its chief advocate in Vulpius.[9] Soule[10] advocates

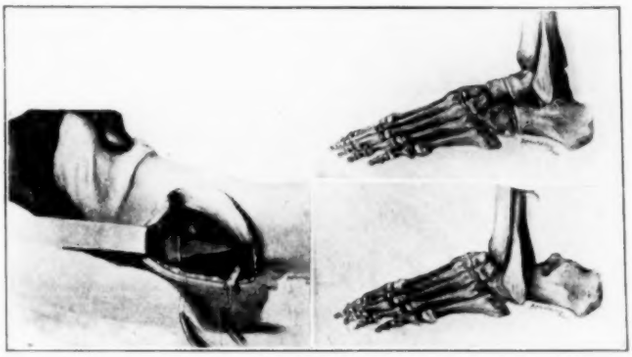

Fig. 6.—Astragalectomy — the Whitman operation: On left, the external malleolus rests in a similar socket over calcaneocuboid joint. Note backward displacement of foot, and fibula carried well forward. On right, above, normal relation of tarsal bones; below, relations following the properly done astragalectomy.

arthrodesis of the astragaloscaphoid joint, with the use of a bone peg to aid ankylosis.

The operation of astragalectomy was first performed in 1842 by Lund[11] of London for the correction of a very severe talipes, and its use has since been reported by numerous authors, usually in traumatic and infectious cases. Willens[12] reports in 1911 its use in cases of clubfoot in an operation devised by him. Peraire[13] used it with goods results in a case of traumatic paralytic equinovarus. In none of these was the foot displaced backward. Its use in paralytic talipes was first advocated by Dr. Whitman in 1901. The operation briefly consists of the enucleation of the astragalus, fibro-arthrodesis of the joint, transplantation of the tendons, and the backward dislocation of the foot. The cases in which it is serviceable have since been much extended by Whitman. Favorable results from the operation have been reported by Dane and Townsend[14] in a series of cases from the Childrens' Hospital, Boston, and also by Lord[15] and others.

Fig. 7.—Astragalectomy — the Whitman operation: Disposition of tendons of peronei into the Achilles tendon and resuture, and tendon fixation (Galli operation).

The operation has been modified by Robert Jones,[16] who divides it into a two part procedure. His method

2. Watson: Brit. Jour. Surg., 1914-1915, p. 390.
3. Allison: Am. Jour. Orthop. Surg., 1912-1913, p. 519.
4. Bradford and Soulter: Boston Med. and Surg. Jour., 1907, **157**, 655.
5. Barton and Plummer: Am. Jour. Orthop. Surg., 1912-1913, p. 499.
6. Lovett: Am. Jour. Orthop. Surg., 1905, **12**, 405.
7. Rich, E. A.: Limitations of Lange's Silk Ligaments in Paralytic Surgery and Substitutes Therefor, THE JOURNAL A. M. A., Nov. 1, 1913, p. 1597.
8. Feiss: Rev. neurol. and psychiat., **11**, 307.
9. Vulpius: Am. Jour. Orthop. Surg., 1912-1913, **10**, 272.
10. Soule: Tr. Am. Orthop. Assn., Philadelphia, 1914.
11. Lund: London, 1872.
12. Willens: Brit. Med. Jour., **2**, 984.
13. Peraire: Paris chir., 1912, **4**, 294.
14. Dane and Townsend: Am. Jour. Orthop. Surg., 1904, **11**, 38.
15. Lord, J. L.: The Whitman Operation for Talipes Calcaneus Paralyticus, THE JOURNAL A. M. A., Oct. 11, 1913, p. 1374.
16. Jones, Robert: Lancet, London, 1914, **1**, 1786.

is not much used in this country. Tubby[17] modifies the operation by using Lange's silk ligaments to strengthen the Achilles tendon after division.

Tendon fixation separately or as an adjunct to astragalectomy has been used by the author in several of his later cases with good results.

## ABSTRACT OF DISCUSSION

DR. FREDERICK C. KIDNER, Detroit: I can agree with Dr. MacAusland in the use of the Whitman operation, in selected

Fig. 8.—Astragalectomy—the Whitman operation: Disposition of tendons of peronei, into Achilles tendon, and resuture of ends.

cases, but I cannot feel that so mutilating an operation is necessary in a large portion of paralyzed cases. He has spoken of the rapid growth of the foot following the operation because of the restoration of function. We know that growth can be stimulated to a great degree by ordinary massage, heat applications and other therapeutic measures. Therefore, this argument for the operation is not very strong. As to the function, there is no doubt that the strong, firm foot resulting from astragalectomy is a very useful one, but so are many feet which wear light braces or are in moderate valgus or varus. To my mind, astragalectomy should be limited to severe cases of paralysis in well grown feet.

DR. J. D. GRIFFITH, Kansas City, Mo.: It seems to me that we have discarded transplantation of tendons, and that if we are discarding the silk ligaments, we have to come to the Whitman operation. Dr. Whitman has shown before, and Dr. MacAusland is now showing, that this surgical interference is not interfering with growth in length, size or the function of the foot to any great extent. In these cases of equinovalgus and equinovarus, particularly valgus with calcaneus, there is nothing left to do but this operation.

DR. ALBERT H. FREIBERG, Cincinnati: A few years ago, Dr. Whitman felt that the profession was somewhat tardy in recognizing the value of his operation; and I think that events

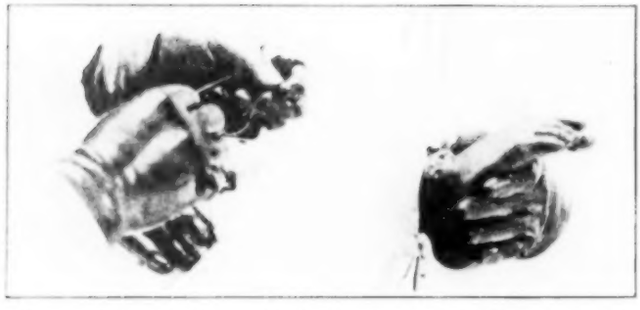

Fig. 9.—Astragalectomy—the Whitman operation: Note the posterior displacement and the position in which the foot is being held during suture and the application of plaster with the knee flexed and the foot in slight equinovalgus.

have fully justified him in his attitude. I feel, however, that if he were here today, he would have just as much objection to the trend of events, now that the pendulum has swung too far the other way. There is no question in my mind that his operation has great advantage in suitable cases. I have used it, and shall use it, I hope, very often. On the other hand, it seems to me that there is something wrong with the tendon transplantations of the man who says that tendon transplantations must be given up, to have their place taken by a mutilating operation such as this is, even under most favorable conditions. We have learned that we had expected too much of tendon transplantation. We have also learned that the complicated procedures had to be abandoned, and that it was not possible to convert a flexor into an extensor, or an extensor into a flexor, ad libitum; because the muscles would fail to respond to unreasonable demands made on them. There are certain psychologic problems to which the brain will not respond. It seems to me, however, that many of us—evidently not all of us—must have cases of tendon transplantation, done under more or less ideal conditions, which have stood the test long enough to make it impossible to deny the considerable advantages that the patients have received from the operation. It is further understood by men of experience that we cannot switch muscles around as we please and sew them down in an insecure way and have the tendons move freely in the proper direction. We have learned that in cases in which there is fairly isolated paralysis of the tendons about the foot, we may be able to pass tendon under the annular ligament, the tibialis anticus, for instance; and in that way get an excellent result which will stand the test of time, and produce a foot of a degree of functional perfection that is not at all to be compared with the most delightful result after the Whitman operation, useful as that procedure may be in extensive paralysis.

DR. C. M. JACOBS, Chicago: I want to ask Dr. MacAusland what is his average shortening of the limb in his series of

Fig. 10.—Astragalectomy—the Whitman operation: In plaster, following operation.

cases following this operation. I would also like to ask him whether he has done any other operation—say the Galli—for a calcaneus condition. I was always in favor of the Whitman operation until I tried Galli's method of inserting the Achilles tendon into a groove on the posterior portion of the tibia. My first case, which was done a year ago, gave such excellent result that it led me to discard the Whitman operation for paralytic calcaneus.

DR. EDWIN W. RYERSON, Chicago: The Whitman operation is a very valuable one, but it is not applicable to every type of paralyzed foot. Dr. MacAusland goes just a bit too far in this. The Whitman operation should not be performed in cases in which there remains strength in the calf muscles. The tibia should not be displaced forward on the foot, because a very undesirable degree of equinus is likely to result. I have seen this in some cases. In cases in which these muscles are strong, one should do astragalectomy, if it is indicated, and should not displace the foot backward on the tibia. I consider that tendon transplantation is by no means obsolete, no matter what you may have gathered from the statements that have been made. It remains today an extremely valuable, and the only proper, operation for certain forms of paralysis. The fact that a foot has simply weakness or infantile paralysis is no more reason for doing a Whitman operation than for extracting the patient's teeth. The cases must be considered carefully and individually. The Whitman operation is

17. Tubby: Clin. Jour., 1912-1913, **40**, 163.

not applicable to certain cases, and should not be done in them. The cases in which it is especially desirable are cases in which there is great lateral mobility of the foot, where the foot rests on a very freely movable astragalus and is not stable. In cases of dangle-foot, the Whitman operation, as performed by Dr. MacAusland, is very valuable, and is the best procedure devised; but in cases in which tendon transplantation can be done—and there are many such cases—do not remove an astragalus unless it is necessary. I have dozens and dozens of cases in which the results of tendon transplantation are satisfactory to both the patients and myself; and I have other cases in which they are not satisfactory, because we hoped for too much from the operation in the past. We cannot cure a foot that is very badly paralyzed by tendon transplantation, but it has a wide field of application in cases of moderate or isolated paralysis. Such cases can be treated beautifully in this way, and we should not discard the operation of tendon transplantation, which is a therapeutic resource of the greatest possible value in properly selected cases.

DR. W. C. CAMPBELL, Memphis, Tenn.: I have operated in this way in thirty cases with excellent results, but my cases have been selected cases. The type of case in which I found the procedure most satisfactory was calcaneovalgus in which there was considerable power remaining in the peroneal muscles. Out of these thirty cases, or over, I have had two that have had some inversion afterward. The inversion has not been severe and has been correctible by tilting the shoe. I now always tilt the shoe in such cases. I have also employed the method of tendon fixation to the external malleolus and fibula to prevent inversion. It is very important to maintain the right position in putting the foot in plaster. It should be

Fig. 11.—Shoes to be worn after Whitman astragalectomy.

placed in an overcorrected valgus position as well as in moderate equinus with backward dislocations.

DR. J. T. RUGH, Philadelphia: Some of those present saw an operation in Philadelphia about two years ago that combined exactly the same principles as the Whitman operation. It has not received the attention it deserves. It is the Davis operation and he has chosen to call it "the transverse horizontal section." I have always felt that the Whitman operation was essentially indicated in cases of the calcaneus type of paralysis; and the Davis operation combines the same principles as the Whitman but does not remove the astragalus. The disadvantages of the Whitman operation is the increase of shortening, which must be compensated for by tilting of the foot, with slight resulting equinus. In the Davis operation a transverse osteotomy is done below the astragalus, that is, between the astragalus and the calcaneus. The posterior calcaneo-astragaloid articulation is separated, and the foot is displaced backward and put in the position of slight equinus. A tendon transplantation can also be done; or where there is no power in the peroneus and where there is a total loss of the Achilles tendon, I have been doing the Putti operation, cutting off the tendon from the muscle and transplanting the tendon into the tibia a little differently from the way in which it is done in the so-called Galli operation, with excellent results—making an absolute ligament of the tendon.

DR. R. L. HULL, Oklahoma City: I have done the Whitman operation in from fifty to seventy-five cases. This operation was originally devised for cases of calcaneus and calcaneovalgus, and it is better for them than any other operation. I have done it in a patient 3 years old, and I have done it in adults of 21 and 24 years. In every case in which the patient is from 3 to 6 years old, I approach the operation with a great deal of enthusiasm, because I know that I can give the patient the best possible functional result—better than from any other operation or series of operations. Recently I have been a little more radical, and have been doing it in a few cases of varus and equinus. It is impossible to know yet what the end-results will be; but at present it has seemed to meet the indications better than any other operation with which I am familiar.

DR. C. B. FRANCISCO, Kansas City, Mo.: In 1907 I assisted Dr. Whitman in adding fifteen or sixteen cases to his original

Fig. 12.—Infantile paralysis, valgus deformity: From left to right, anterior view before operation, lateral view before operation, anterior view twenty months after astragalectomy, and lateral view twenty-two months after astragalectomy.

report. Naturally, I have been very much interested in his operation ever since. I think that if we had an operation that met the requirements in every case of deformity of the foot as well as the Whitman meets those of the calcaneovalgus deformity, we should be glad to adopt it. I know what the result will be when I do this operation. You can tell absolutely what you will get—what motion. You will get from one third to two thirds of the normal range of motion in children under 10 years. You also know pretty definitely what the foot will look like. In the badly paralyzed cases, you know that there will be a little cavus; and it will take a while for the foot to flatten out, but you have no hesitancy about recommending it. When you get into the varus type, that, to me is the hardest deformity that I know of to cure and have stay cured. One of the most distressing things is to manipulate and resect and do everything you know how to, and get good position and then turn the patient out and lose track of the case, only to have the child return, a year or so later, with the deformity as bad as ever, so that you feel that you have done harm, instead of good. I have not, so far, used the Whitman operation in the varus type, as I am now trying out the Galli method of fixation of the peronei. I believe that there are certain cases of varus in which the Whitman operation will prove satisfactory, as indicated by Dr. Ryerson; the lateral movement type. The operation does away with that. I think that Dr. MacAusland is to be congratulated on having brought the subject before us.

DR. W. RUSSELL MACAUSLAND, Boston: The proof of the pudding is in the eating. I have not heard any one advocating

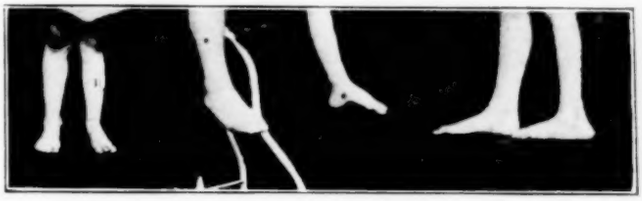

Fig. 13.—Infantile paralysis, calcaneovalgus deformity: Anterior view before operation, lateral view before operation, and lateral view twenty months after astragalectomy (Whitman).

the value of tendon transplantation without saying, "In almost every case," or a similar qualifying remark. I can say what my results have been in astragalectomy. In one hundred and thirty-five cases, there have been only three cases of varus. This is a very difficult deformity to overcome when it does occur; and it should be guarded against carefully. These cases of varus all occurred in patients living out of town, some of the postoperative treatment being left to assistants. The important thing is to put the foot up in valgus and slight equinus. I keep the valgus during the entire treatment;

correct the equinus when the quadriceps is gone, and retain plantar flexion of five to eight degrees when the quadriceps is present. Dr. Freiberg's remarks carry considerable weight. His results from tendon transplantations and those of many others which have come under my observation in Boston are not satisfactory. I have also looked up the results of arthrodesis in young children, and found that in 90 per cent. of the cases the old deformities recur or new ones appear. If tendon transplantation does not add to the stability of the foot and increase its function, it is not the best operation. When we take a tendon from one place and put it in another, we weaken the tendon and also weaken the side that it came from, and put it where it never can act to its full strength. I did not say that I used the Whitman operation in every case. If by tendon transplantation any of the surgeons here can obtain correction of the deformity, universally, increase function and secure stability, then it is certainly an operation for them on a par with astragalectomy. Dr. Jacobs asked about the average shortening that I obtain. Astragalectomy does not shorten the leg. The shortening in my cases was about ½ inch to 1½ inch. In cases with the os calcis vertical the malleoli naturally lie nearer the ground following astragalectomy. The Galli operation has undoubtedly a prominent place in the treatment of infantile paralysis. Up to the present, however, my experience has not been such that I care to make any statements about it. I shall not do so until I have formed definite conclusions. Dr. Ryerson says that the pendulum has started to swing too strongly in the direction of astragalectomy. Dr. Whitman has tried to impress the value of astragalectomy as compared with tendon transplantation before, and failed. With regard to this operation, it is on a similar plane with all the other surgical procedures that he has advanced. Nothing has been found as a substitute for them. Dr. Campbell spoke of inversion. I had that happen in three cases. These inversions are very objectionable deformities. I was able to correct them by placing the fibula further forward, holding it there by means of the Galli operation; suturing the peroneal tendons into the fibula. These patients are all right now.

Fig. 14. — Infantile paralysis, calcaneovalgus deformity, operation, May, 1912: Anterior view before operation, posterior view before operation, anterior view six months after astragalectomy (Whitman), posterior view six months after operation, and lateral view six months after operation.

## INTESTINAL OBSTRUCTION DUE TO ASCARIS LUMBRICOIDES

### REPORT OF A CASE

J. MAXIME PERRET, M.D.,
AND
H. THEODORE SIMON, M.D.
NEW ORLEANS

In the latter half of the nineteenth century, opinion was divided as to the possibility of *Ascaris lumbricoides* being the etiologic factor in intestinal obstruction; thus, Leichenstern and Treves opposed this view, while Trousseau, Bretonneau and Stutz[1] upheld it, each having been among the first to report cases.

Bordoroni and Stepp in 1887 reported two cases, both of which were confirmed postmortem.

Simon,[2] in 1892, while holding a necropsy in a case of intestinal obstruction, found the cause to be a mass of roundworms.

Botoff,[3] in 1897, reported a case of obstruction, perforation and peritonitis, in which the postmortem revealed the presence of 500 roundworms.

In 1899, Taylor[4] found sixty-six worms in a case of intestinal obstruction.

Zotoff[5] reports a case of Mosler and Peiper of a 3 year old girl who died of peritonitis with two perforations in the ileum, 17½ inches from the cecum; through one of these openings twenty-five roundworms projected; the ileum between this point and the cecum, ascending colon and transverse colon were completely filled with roundworms, numbering 500 in all.

Van Meter[6] reports a case of a child aged 5 years, having a sausage-like mass above and to the left of McBurney's point, in which operation revealed in the lower part of the ileum a coil of roundworms causing complete obstruction; the author says that there were almost enough parasites "to fill a wash basin"; the patient recovered.

A case, reported by Venning,[7] of a 2½ year old boy who was operated on and died, was diagnosed before surgical intervention by palpation of the intestinal masses through the abdominal wall; 273 worms were removed, the site of obstruction being the jejunum, ileum and cecum.

Vickery[8] was called to see a pregnant woman with symptoms of intestinal obstruction and a history of vomiting several roundworms; on being given a dose of sanotin, followed by castor oil, she vomited twelve roundworms. The symptoms of obstruction disappeared, and excepting for the sudden termination of gestation, she made an uneventful recovery.

Takaki[9] reports a case of acute obstruction in a 3 year old child with complete recovery following the vomiting of 115 roundworms.

Having consulted the records of Charity Hospital in the ten years from 1906 to 1916, we find 112 cases of intestinal obstruction, in ninety adults and twenty-two children, and of these, there is but one case in which the roundworm is the etiologic factor. The patient was a young negro girl who was operated on for obstruction. A portion of the intestine was filled with a mass of worms. The condition necessitated a resection of the intestine, and a Murphy button was used; shortly afterward, after some apparent improvement, the child died, and necropsy revealed the presence of a roundworm in the lumen of the button, which it occluded.

### REPORT OF CASE

*History.*—M. M., white girl, aged 8, was admitted to a surgical ward on the evening of March 14, 1916, having been referred by an attending physician for surgical intervention of what he rightly diagnosed acute intestinal obstruction. The family history was of interest, as the patient's five sisters and brothers had passed roundworms on many occasions. The past history was negative except that the child had frequently passed roundworms since the age of 2.

Five days prior to admission, the child was suddenly taken ill with a pain in the right lower abdominal quadrant, and

1. Huber, J. C., Trousseau, Bretonneau and Stutz, in Twentieth Century Practice of Medicine.
2. Simon: Rev. méd. de l'est., 1892, p. 228.
3. Botoff: Jour. d. clin. et thérap. inf., 1897, No. 10.
4. Taylor: Am. Jour. Obst., 1899, p. 808.
5. Zotoff, in Nothnagel: Encyclopedia of Practical Medicine.
6. Van Meter, B. F.: Intestinal Obstruction Due to Roundworms, Surg., Gynec. and Obst., 1909, **8**, 409.
7. Venning, R. E.: Intestinal Obstruction from Ascarides Lumbricoides, THE JOURNAL, A. M. A., June 18, 1910, p. 2041.
8. Vickery, D. H.: Intestinal Obstruction Due to a Coil of Worms, Brit. Med. Jour., 1913, **2**, 1534.
9. Takaki, Y.: Sei-I-Kwai, June, 1915.

slight elevation of temperature. On the second day she began to vomit, and this continued up to the time of admission. The vomitus consisted of a clear watery fluid. A dose of castor oil was given the second day and only a very small stool passed, with no more bowel movements until she came under our observation.

TEMPERATURE, PULSE AND RESPIRATION

| Time | Temperature | Pulse | Respiration |
|---|---|---|---|
| On admission | 101 | 120 | 25 |
| Four hours later | 103 | 112 | 30 |
| Eight hours later | 102.4 | 116 | 26 |
| Twelve hours later | 99.6 | 100 | 24 |

*Physical Examination.*—The child was poorly developed and nourished. The skin was of a slight sallow tint. The glands in neck and groin were enlarged. The eyes were sunken, with dark hollows under the orbits. The teeth were badly kept. The tongue was dry and coated. The throat, nose, ears and heart were negative. Coarse mucous râles were heard over the lower half of the right lung, both anteriorly and posteriorly. The abdomen was distended and tympanitic; there was no rigidity. In the left lower abdomen, in the region of the sigmoid, a mass the size of a large lemon was palpated. The viscera were not palpable. The extremities and reflexes were negative.

Laboratory Reports: There was a total white blood count of 16,800 per cubic millimeter. The differential white count revealed: lymphocytes, 21 per cent.; endothelial leukocytes, 3 per cent.; neutrophils, 67.5 per cent.; eosinophils, 8.5 per cent. Examination of the urine revealed: albumin and sugar, negative; indican, strongly positive; microscopically, a few leukocytes.

After the examination a purgative enema was given, and returned colored with fecal matter and containing a mass of approximately forty roundworms, coiled and interwoven together, the size of a child's closed fist. A second enema was given and returned highly colored with fecal matter. The distention was relieved, and excepting for a rise in temperature the first eight hours, the patient's condition improved, and in twelve hours the temperature was but 99.6 F. The patient continued to improve, and excepting for an acute bronchitis, which she developed on about the seventh day, made an uneventful recovery, and was discharged as cured, April 2, 1916.

Mass of approximately forty Ascarides lumbricoides, × 1½, expelled in a case of acute intestinal obstruction.

SUMMARY AND CONCLUSIONS

We find that although the disease is rare, there are quite a few cases of intestinal obstruction due to roundworm.

Most cases are diagnosed at necropsy or on the operating table, and only seldom is the mass of worms expelled through the natural channels.

Although the most drastic purgatives may be of no avail, the enema may in a few cases cause the surgeon to lay aside his knife.

Charity Hospital.

**The Dairy Cow.**—The dairy cow has been aptly called the foster mother of the human race.—Hon. E. S. Brigham, *Bulletin*, Vermont State Board of Health, Dec. 1, 1916.

# MECHANICAL PROBLEMS OF BRONCHOSCOPIC AND ESOPHAGOSCOPIC FOREIGN BODY EXTRACTION*

CHEVALIER JACKSON, M.D.
PITTSBURGH

In dealing endoscopically with foreign bodies lodged in the larynx, trachea, bronchi or esophagus, it is fundamentally necessary to remember that the problem is not simply to remove the foreign body but to remove it with little or no risk to the patient. It is always necessary to remember that a patient is far safer with a foreign body in his air or food passages than he would be if the intruder were ruthlessly torn out at all hazards. Ruthless withdrawal is comparable to the act of the ignorant farmer who hitches a team of horses to the malpresented calf. Only in the rarest instances is immediate removal necessary, and it is far better to desist at once if at the first bronchoscopy it is found that special instruments will need to be devised to remove the intruder. On the other hand, it is never wise to make the first bronchoscopy without having prepared beforehand everything that can possibly be needed, so far as it is possible to foresee from a study of the roentgenogram, history, symptoms and physical signs.

The experience resulting from the encounter with foreign bodies of almost all conceivable shapes and substances has resulted in an armamentarium which probably can deal with all kinds of foreign bodies. When the bronchoscopist first catches sight of a foreign body for which he has been searching, the temptation to seize it by whatever part is visible and to pull on it with all the strength of which his forceps are capable is very great; and one might say that the temptation is greater directly as the duration of the search.

Yielding to this temptation has been the cause of more mortality in foreign-body bronchoscopy and esophagoscopy than any other single factor. Moreover, hasty, injudicious traction of this kind will very often not only fail to remove the foreign body but will so complicate the situation as to render subsequent removal exceedingly difficult. In other words, the mechanical problem is converted from a very simple into a very complicated one, just as pulling on a tangled mass of string will render subsequent disentanglement difficult or impossible. Therefore, it may be stated that there are three reasons why the study of the mechanical problems of foreign-body extraction constitute the most important study in foreign-body endoscopy.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

These three reasons are: 1. Attempted endoscopic removal of a foreign body by seizure, followed by traction without proper study of the mechanical problem, ends in a high percentage of mortality.

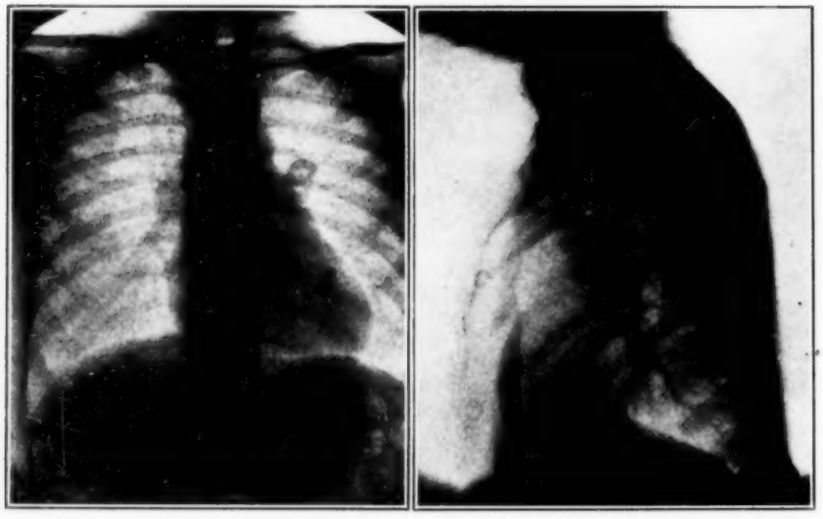

Fig. 1.—Roentgenogram showing an iron casting in the right bronchus of a child of 8 years. The movements of the casting are shown in Figure 3. Foreign body removed by peroral bronchoscopy without anesthesia.

2. Such attempts frequently fail to remove the foreign body.

3. Such attempts frequently complicate the problem so as to render subsequent removal exceedingly difficult, converting an easy problem into a difficult one, or even into one impossible of endoscopic solution.

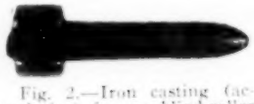

Fig. 2.—Iron casting (actual size) from a blind roller shown in Figure 1. The hard, smooth conoidal end, presenting in a tightly fitting ring of swollen mucosa, rendered difficult the finally accomplished seizure of the stem below the conoidal end.

The following considerations of solutions of mechanical problems are based on the successful endoscopic removal of foreign bodies from the esophagus, larynx, trachea and bronchi, in 543 out of 550 cases (98.7 per cent.). In the 550 cases, seven patients (1.3 per cent.) died within a week. In six of these the patient was in bad condition when admitted. In only one of the seven could the death be attributed directly to the bronchoscopy. The parents refused to allow a postmortem, so the cause of death could not be determined. In a large proportion of the 543 successful cases, removal had previously been unsuccessfully attempted by others. That success attended the efforts of Dr. Patterson and myself was due not to greater skill, nor to superior instruments, but rather to the careful study of the mechanical problems involved and to the avoidance of the dangers hereinafter pointed out. Some of the previously described solutions of mechanical problems are merely mentioned in connection with later statistics which confirmed the value of the methods. There is much overlapping of the groups of statistics because of many cases presenting a combination of two or more problems, each of which was separately solved according to its class.

*The Advantages of Small Tubes.*—In the solution of mechanical problems of foreign-body extraction, the advantages of small tubes are not generally realized. For general purposes, such as the diagnosis of disease, finding of a small foreign body without risk of overriding, etc., the largest possible tube has great advantages; but in the working out of difficult problems of endoscopic foreign-body extractions, the small tube has advantages that make all the difference between success and failure. As will be seen in Figure 11, a tube (*A*) that fills the entire lumen of the esophagus or bronchus has no lateral range of motion, while a relatively small tube (*B*) has a very useful range of movement. The value of this lateral movement is realized when it is remembered that endoscopic tubes are rigid, whereas endoscopic instruments other than tubes are necessarily long and slender; hence the distal ends are not susceptible of a useful degree of lateral movement. The forceps *C* cannot be moved with any useful degree of control from *D* to *E*, whereas the forceps *F* can be energetically moved from *G* to *H* by lateral movement of the tube, *B*, because of the smallness of the endoscopic tube, *B*, relative to the esophagus, bronchus or trachea, as the case may be. We may say, then, that forceps in a large tube have no useful lateral range of movement, while tubes small in diameter relative to the diameter of the esophagus or bronchus have a lateral range of movement that is in some cases indispensable to success.

*Motion of Foreign Bodies in the Bronchi.*—An important factor which must be always in the mind of the endoscopist in working out the solution of a mechanical problem of foreign-body extraction is that the foreign body is never still a moment. The movements are bechic, respiratory and pulsatory. All of these movements in many cases greatly increase the difficulties of removal; in other cases the movements can be taken advantage of to assist the bronchoscopist. An instance of the latter may be cited in the case of a long foreign body, such as a pin, completely hidden in a small bronchus into which the bronchoscope cannot enter, but from which the point of the pin may

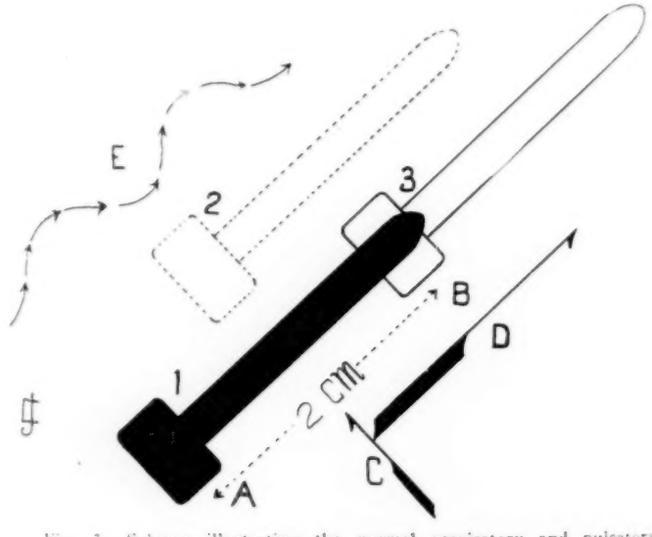


Fig. 3.—Schema illustrating the normal respiratory and pulsatory movement of the bronchi along with bodies contained therein. There is also, in case of bodies free to move, a movement of the foreign body with relation to the invaded bronchus, during cough, respiration, etc.

be protruded during bechic, respiratory or pulsatory movement (Fig. 10). More often, however, these movements are a great hindrance, not only by the fact

that they keep the foreign body in motion, but that they all tend to bury the point of sharp pointed objects. The respiratory and pulsatory movements are really in many planes, but the chief movements noticed by the bronchoscopist in all cases of foreign bodies in the larger bronchi is the to-and-fro motion toward and from the bronchoscope, chiefly in the bronchoscopic axis. Advantage can be taken of this movement so to place the bronchoscope that the point of a pointed foreign body may enter the tube mouth. In doing this it is very necessary to remember that the recession of the foreign body will withdraw the point out of the tube mouth unless the tube mouth is, at the proper moment, inserted far enough down over the foreign body. This maneuver concerns foreign bodies whose points are free when first approached or have been freed as the first stage of the solution of the mechanical problem. In addition to the more or less axial movement of the foreign body there are also a number of lateral movements, though these may be more or less hindered by some degree of opposition on the part of the bronchoscope.

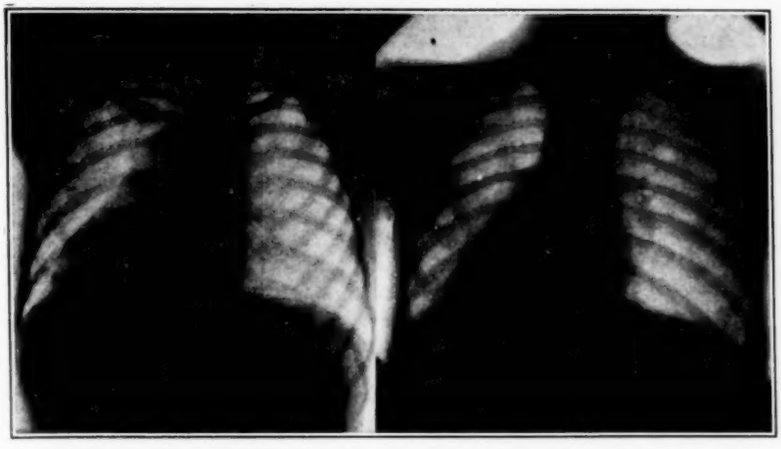

Fig. 4.—Roentgenogram showing obstruction of the left inferior lobe bronchus, by a Greek peanut (pistachio) shell, in a girl of 8 years. When such a shadow is seen we may know that we shall have to deal with a foreign body fitting tightly and corklike in a bronchus. There is shown compensatory emphysema of the right lung and also of the left upper lobe. The right-hand roentgenogram shows the disappearance of the triangular shadow after the removal of the pus and the obstructing foreign body, by bronchoscopy, without anesthesia, general or local. (Plate made by Drs. Johnston and Grier. Author's case.)

Fig. 5 — Shell of pistachio nut removed by peroral bronchoscopy without anesthesia. The broad surface was found presenting, requiring version to present an edge for seizure.

Dr. George C. Johnston thus describes the various movements as seen fluoroscopically in a case of the author (Figs. 1 and 2):

> The foreign body, which is 1 cm. in diameter by 3 cm. in length, is observed to be in constant motion. The foreign body was seen to move 2 cm. up and down at each excursion of the diaphragm. The excursions of the foreign body are downward and outward, upward and inward. In addition there is a constant lateral motion of the foreign body synchronous with the cardiac impulse. The foreign body is never at rest. The least amount of motion is found at the instant of full inspiration.

These movements I have endeavored to represent schematically in Figure 3. They are represented in one plane only. It is necessary to remember that there is a similar movement, though of less excursion, in many other planes.

## PROCEDURE

The various steps in the solution of the various mechanical problems of foreign-body extraction, as practiced in the author's clinic, are as follows:

1. Roentgenographic study.
2. Preliminary working out of a mechanical problem, based on the probabilities as deduced from the Roentgenographic study.
3. Endoscopic study.

*Roentgenographic Study of Mechanical Problems of Endoscopic Foreign-Body Extraction.*—The marvelous advances in roentgenography have wonderfully simplified the solution of mechanical problems of the disimpaction and removal of foreign bodies. The roentgenologist now usually produces a roentgenogram which shows not only the foreign body but sufficient outlines of the bronchi to enable the endoscopist to formulate a plan of disimpaction and removal that will be correctly based, according to the experience in the author's clinic, in about two thirds of all cases in which the foreign body is opaque to the ray. In case of foreign bodies not opaque to the ray, their presence can often be determined almost certainly from the visible pathologic sequelae; yet this does not aid in the solution of the mechanical problem further than to indicate in certain instances (Fig. 4) that complete obstruction of a bronchus means a tightly fitting, corklike impaction of the foreign body in the invaded bronchus. In all cases roentgenographic study should include an anteroposterior and a lateral roentgenogram. In some instances aid will also be obtained from a roentgenogram taken in the quartering lateral position, but in no instance should this take the place of the lateral, and in any case great care is necessary to prevent the quartering roentgenogram from confusing the endoscopist's mental conception of the position of the foreign body as gained from the anteroposterior and the lateral roentgenogram, taken as nearly as possible on planes perpendicular to each other. Fluoroscopy cannot take the place of a roentgenogram, because, as a rule, the trachea and main bronchi cannot be seen on the fluoroscopic screen; and many bodies of borderline opacity are visible roentgenographically though invisible fluoroscopically.

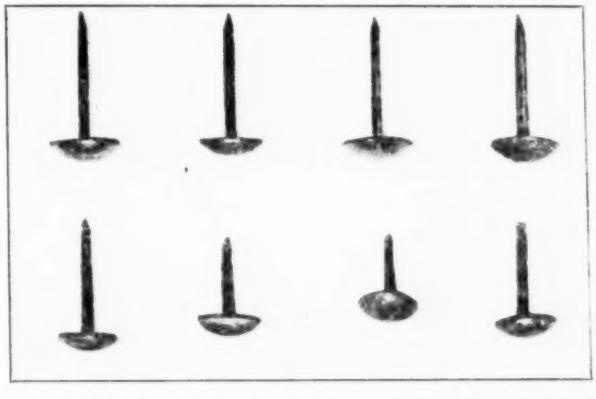

Fig. 6.—Upholstery tacks from the bronchi (eight cases). The removal of these presented the mechanical problem of the mushroom anchor.

*Prearranged Plan.*—Given good lateral and anteroposterior roentgenograms showing the size, shape and position of the foreign body, a knowledge of the dura-

tion of the sojourn, and a previous experience with a similar foreign body, a preliminary plan of extraction can be worked out, and in most cases such a plan will be found successful. If, however, the intruder has been injudiciously pulled on, preliminary plans are usually useless; nothing but local endoscopic study will avail.

*Endoscopic Study.*—The region of the foreign body should be approached carefully so that the tube mouth or secretion swabs shall not touch the foreign body until after the size, shape and, particularly, the position of the intruder relative to the bronchial wall, are

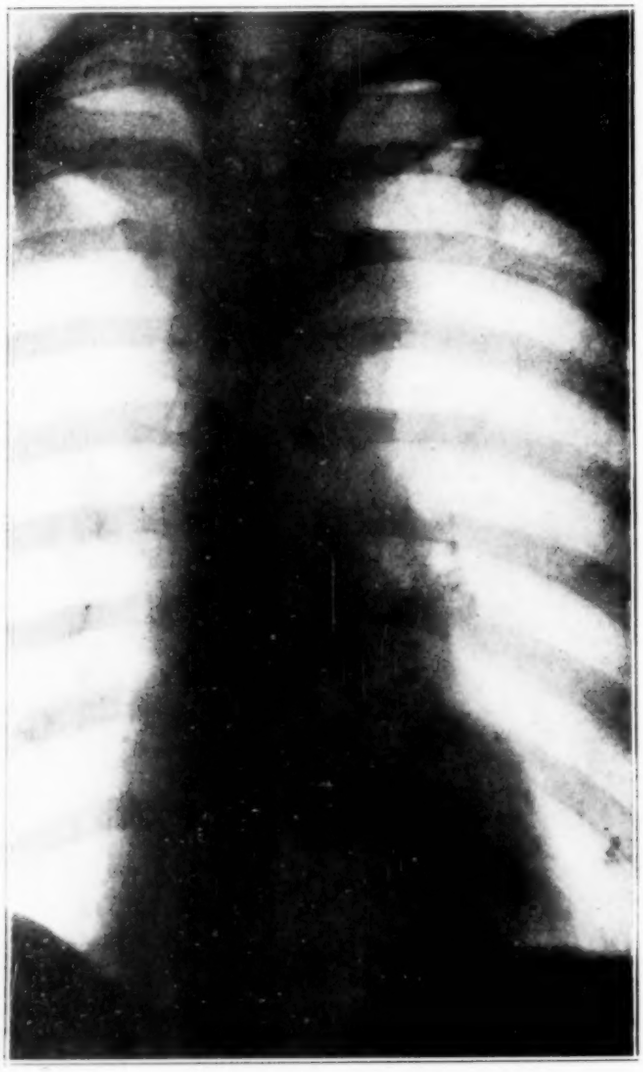

Fig. 7.—Roentgenogram showing a bit of wire from an egg beater in the esophagus, where it had lodged while the patient was eating custard pie. The hooked ends do not show because the bends are in the sagittal plane.

studied. Careless swabbing may force the foreign body downward. In the larynx, to justify an endoscopic study before seizing the foreign body, the patient must be in the author's "low head" position, so that if dislodged the intruder will not drop downward into the deeper air passages. In using this position the author has a number of times released and regrasped a foreign body in the work of disengaging the point or otherwise solving the mechanical problem presented by the removal of the foreign body with the least possible trauma.

## MECHANICAL PROBLEMS

*Objects Presenting a Thick Conical End.*—These often present great difficulty of grasping because the forceps are prone to slip both sidewise and longitudinally. Forceps whose jaws are slightly cup-shaped have less tendency to slip sidewise; and those with properly made teeth will usually hold if the jaws are sufficiently far down on the object, as for instance was done in case of the foreign body illustrated in Figure 2. This is not often easy to do in case of thick foreign bodies because the proximity of the bronchial walls prevents proper expansion of the forceps' jaws. The difficulty is much increased if the intruder has been in situ sufficiently long to permit of swelling of the superjacent bronchial mucosa; and the difficulties may be enormously increased by trauma of previous attempts.

Fig. 8.—Wire removed by peroral esophagoscopy from the esophagus of a woman, aged 57 years. Removed by peroral esophagoscopy without anesthesia, general or local. The object is turned partly edgewise to show the hook-shaped ends, which presented the great difficulty in removal.

*Irregular Objects.*—These frequently present in such a way that they require turning so as to present a favorable surface for the grasp of the forceps. For instance, the peanut (pistachio) shell (Figs. 4 and 5) presented its concavity toward the tube mouth. The shell was turned so as to present its edge for the grasp of the forceps. Watermelon seeds (Fig. 12) in many cases require to be thus turned. Version is one of the most frequently required procedures in the solution of endoscopic mechanical problems.

*Sharp Pointed Bodies.*—All sharp-pointed, more or less straight bodies, such as needles, pins, nails, tacks, etc., have strong tendencies (1) to become embedded at the point; (2) to become transfixed crosswise, and (3) to work lower and lower into the air passages by a ratchet-like action. The mechanical problems of their removal have been elsewhere gone into quite extensively by the author and need not be reconsidered here. In general, however, it may be stated that the pulling on such bodies almost invariably results in crosswise fixation or fatal laceration of the bronchi, with failure to remove. In all cases the position of the foreign body should be carefully studied with a view to getting the point disimpacted and into the tube mouth before any traction whatever is made. Quite frequently the disengaging of the point requires the pushing of the foreign body downward so as to withdraw the point from the wall in which it is embedded by bechic efforts at expulsion in the case of the air passages, and by the pressure of food in swallowing in the case of the esophagus.

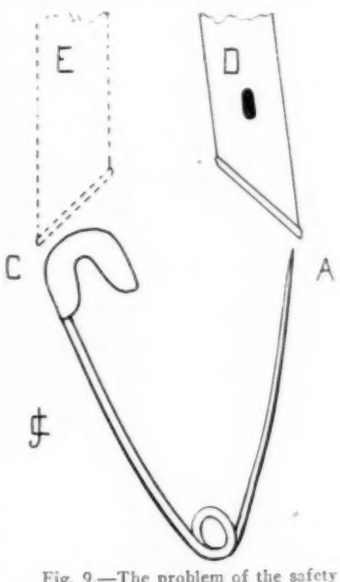


Fig. 9.—The problem of the safety pin. Twenty-seven safety pins have been endoscopically removed from the larynx, trachea, bronchi and esophagus, in the author's clinic, by this and other peroral endoscopic methods.

*Transfixed Foreign Bodies.*—Both points being embedded, these bodies usually require very careful handling; otherwise attempted removal will be quickly fatal. They are quickly and safely dealt with by the methods elsewhere described, which have been uniformly successful in sixty-four cases. Many of the

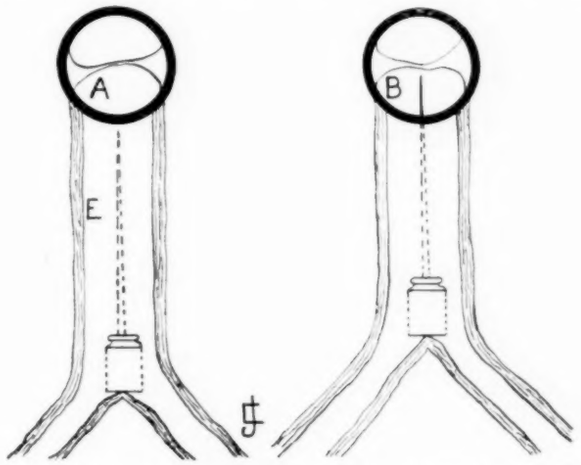


Fig. 10.—Schematic illustration of bechic aid in revealing a foreign body in a bronchus. The dental instrument, *E*, was entirely contained in a small branch bronchus so as to be entirely invisible to the bronchoscopist looking down the stem bronchus, *A*. When the patient coughed, the altered position of the bronchi caused the point of the dental instrument to emerge into the lumen of the stem bronchus as shown at *B*, whence it was easy to remove with forceps.

cases presented other problems in addition to the problem of transfixion.

*Safety Pins, Open, and Point Upward.*—The most important utilization of the roentgenographic study is for the endoscopist to get a mental picture of the position of the foreign body with reference to the approach of the endoscopic tube. For instance, if the esophagoscopic tube is allowed to approach the foreign body without any previous study of the problem, it will usually, in the case of safety pins, present to view first the keeper end of the pin as shown at E, C, figure 9. If, however, the endoscopist from previous study knows that the point *A* is, for instance, outward to the left, he bears in that direction with his tube mouth, as shown at *D*, with the result of bringing into view the point, *A*, or, if this is buried, the shank of the pointed end as near as possible to the point. This enables the endoscopist to solve the safety pin problem in one of the simplest ways, by seizing the pointed end of the pin, *A*, drawing it within the tube mouth, when traction will be relatively safe, as compared to traction on the end, *C*, which will almost invariably prove fatal from perforation of the esophagus, by the point, *A*. Practically the same problem is presented when a safety pin has lodged in a bronchus, especially if, as in one of the author's cases, the point, *A*, had entered far into a lateral branch. In one of the author's cases, the safety pin had lodged in the right bronchus with the point of the pin projecting into the right upper lobe bronchus completely hiding from view all of the shank, *A*. The problem was solved by closing the pin by use of the well-known tilting ring and push fork instrument. In case of esophageally lodged safety pins, the best method in the author's experience has been the one that in the Pittsburgh clinic is called "endogastric version." We have had altogether 27 cases of safety pins, 16 being in the esophagus, 2 in the trachea, 1 in the bronchus, and 8 in the larynx. Of the esophageal cases 5 were closed before removal, 4 were removed by protecting the points with the tube mouth (Fig. 9), and 7 were removed by endogastric version. All of the patients were discharged cured. Our "follow up" system discovered that in one case the child was taken suddenly ill about ten days after leaving the hospital, and died, the exact cause of death not being determined. In this case the pharynx and larynx had been found, at esophagoscopy, to have been very badly lacerated from the attempts of the parents with their fingers to remove the safety pin. The esophagus showed trauma caused by blind efforts with forceps and bougie before coming into the clinic. No postmortem was made.

*Upholstery Tacks.*—These (Fig. 6) usually lie point upward with the head buried in swollen mucosa, presenting the "mushroom anchor" problem, the solution of which has been elsewhere described. It may be stated that our recent cases have brought the total up to eight cases.

*Double-Pointed Tack.*—One of the most difficult problems to solve is that of the double-pointed tack, the points being upward and buried in the swollen mucosa. In the esophagus the most serviceable method is that of endogastric version, as with safety pins. In the air passages version is much more difficult, but can be accomplished by very patient work. The technic has been previously described.[1] We have had six cases of fence staples. Two were in the trachea, one in the right bronchus, one in the left bronchus, and two in the esophagus. All of these were removed by endoscopic version. Five patients made a

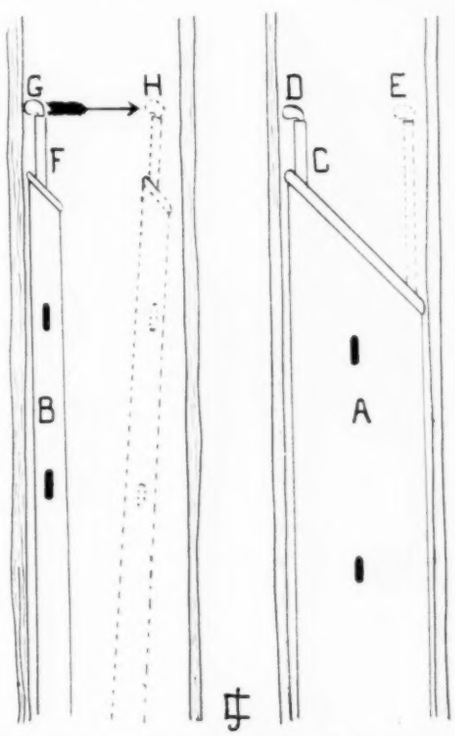


Fig. 11.—Schema showing advantage obtainable by the use of tubes of relatively small diameter. Sidewise movements of forceps can be executed with a small tube, *B*, that are impossible with a tube of large relative diameter, because the thin flexible forceps, incapable of lateral movement, can be forced sidewise by the rigid endoscopic tube if the latter is of relatively small diameter.

prompt and uneventful recovery. One patient, who had been subjected to ill advised traction previous to admission, was suffering with a mediastinal emphy-

1. Jackson, Chevalier: A Fence Staple in the Lung, THE JOURNAL A. M. A., June 5, 1915, p. 1907.

sema, which rapidly proved fatal. In another case a double pointed tack escaped into the pleura, whence it was removed by external operation.

*Hook-Shaped Bodies.*—Hook-shaped bodies, such as artificial dentures with retaining hooks, bits of metal, wire, etc., present great potential dangers if injudiciously pulled on. Usually they require pushing to withdraw the point of the hook. A very difficult problem was presented by the very sharp, hook-shaped point of the wire, Figures 7 and 8. The sharp, hook-shaped extremities were liberated by sidewise movement and then were gotten into the mouth of the esophagoscope, where they were prevented from harming the esophagus during withdrawal. Traction on the part first presenting would have resulted in perforation into the mediastinum.

A few words on prophylaxis may not be amiss here. The presence of this sharp-pointed piece of wire in this woman's esophagus points to the carelessness of using an old broken egg beater in making the custard pie, the swallowing of a piece of which led to the accident. The frequency with which we have removed small bits of bone from the air and food passages of children and adults points to almost criminal carelessness on the part of the butcher shop and kitchen. Pins and needles should not be kept in the kitchen, nor should they ever be held in the mouth while dressing or sewing or at any other time. The fifty pins, needles and similar pointed objects we have removed point to avoidable accidents. Children should be taught not to put in their mouths anything not fit to swallow. The author has collected from the public press in a single year forty-three cases in which children died from the lodgment of a foreign body in the larynx, death occurring before a physician arrived. All toys should be regularly inspected for loose small parts that might be put in the mouth. Coins, poker chips or other small objects should not be used for teething rings. Workmen should have some carrier other than their mouths for tacks, nails, screws, etc. No one should go to sleep with an artificial denture or any other loose object in his mouth. Even an undissolved tablet has been known to cause death by asphyxia. The fact that, thanks to bronchoscopy and esophagoscopy, such objects can be almost invariably removed through the mouth without operation does not excuse the ignorance or carelessness that permitted the accident to occur.

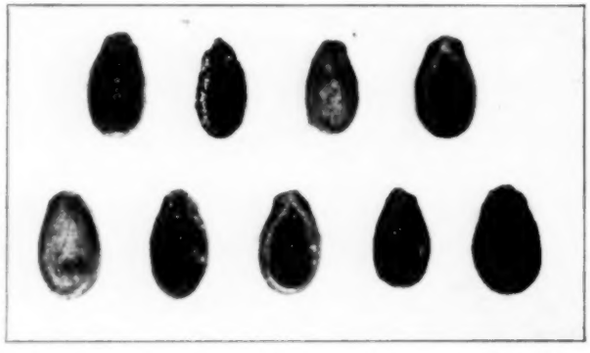

Fig. 12.—Watermelon seeds removed from the bronchi of children (nine cases), by peroral bronchoscopy, without anesthesia, general or local. Some of these required version so as to present an edge for the grasp of the forceps.

*Tightly Fitting, Corklike Bodies.*—These are especially apt to be associated with an annular edema of the bronchi which prevents a proper spread of the forceps' jaws. Two very successful methods of dealing with the problem have been previously published. Briefly described, one is by means of the lip of the bronchoscope making sidewise pressure to permit the insinuation of the hook below one side of the foreign body. The hook is then turned and the foreign body pulled on sufficiently to withdraw it above the annular edema, where it can be seized with forceps. In the other method, strong springlike forceps' jaws, which push back the annular edema in one plane, are employed. These two methods have been successful in dealing with this problem in fifty-two cases, without mortality.

*Soft, Friable Bodies in the Bronchi.*—The essential difficulty in most of these cases is to take sufficient hold with the forceps to permit the withdrawal of the body and yet not such a firm pressure as to crush the intruder. While the fragments of these bodies may be coughed up if comminuted, a much more likely result is to have fatal multiple abscesses with a septic bronchopneumonia as the result of aspirating the fragments into different portions of the lung. We have had sixty-two cases of soft friable bodies, including nut kernels, maize, and various vegetable substances. The foreign substance was removed in all of the cases. There was no operative mortality, but our "follow up" system discovered that two of the patients had died a number of weeks later of septic pneumonia. In both of the cases the foreign body was a peanut kernel. No postmortems were obtained, but it seems probable that some fragments of kernel remained behind either from the breaking off of a fragment when grasped by the forceps, or the foreign body might have been multiple in the first place. It is also possible that the very violent septic bronchitis which is found in practically all peanut cases may have been more than the child could combat.

*Bones.*—The problems of dealing with bones are concerned chiefly with their shape, and these have already been mentioned in connection with pointed objects, transfixed objects, etc. Of bones in the larynx, trachea, bronchi and esophagus we have had forty-seven cases. The bone or bones were removed in all cases. No anesthetic, general or local, was used except in two cases where the bone was of enormous size and very sharp. Here the relaxing effect of anesthesia was deemed necessary for safety, to prevent the esophagus being lacerated by spasmodic gripping of the foreign body on removal. In all of the cases of bones, the patients, with a single exception, made a perfect recovery. The exact cause of the one death, some days later at the patient's home, was undetermined. The patient had a nephritis, though this was stated not to have been the immediate cause of death.

*Disklike Objects.*—These usually present no difficulty unless they are somewhat saucer-shaped and wedged in swollen mucosa and transversely placed. In this case the lip of the bronchoscope is used to make a slight crevice or dent in the swollen mucosa at one part of the disklike object so that an edge can be drawn upward to be seized by the forceps. Pins, sharp points or serrated edges, on disks, complicate the problem and require rotation so as to prevent laceration of the tissues during withdrawal of the foreign body.

In sixty-four cases, buttons, coins, skirt weights and similar disklike objects, including a poker chip, have been removed in our clinic without anesthesia and without mortality.

# THE POSSIBILITIES AND LIMITATIONS OF NONSURGICAL BRONCHOSCOPIC TREATMENT *

ROBERT F. RIDPATH, M.D.
PHILADELPHIA

## GENERAL CONDITIONS OF PATIENTS REQUIRING BRONCHOSCOPIC EXAMINATIONS

The patients and their conditions will vary as does the rainbow. They are usually those who have been treated from one month to a number of years by many different doctors. The majority are more or less emaciated, from the persistent cough and the knowledge of something wrong in their chest for which they have received no relief. Some are sent direct by their physicians; others, having developed the dispensary habit, going from one hospital to another, finally hear of your wonderful bronchoscope and through curiosity as much as the desire for a cure come into your hands. Dependent on the special condition of our patient, we find the general condition. Hence, the asthmatic with his barrel-shaped chest; the tuberculous laryngetic, with hoarse voice and almost continuous expectoration of frothy consistency; the hysterical, who seemingly imitates all or any one of the many symptoms of disease. Generally speaking, however, they are perfectly willing to undergo any examination or instrumentation, to have a correct diagnosis made with the possibility of a cure.

## POSSIBILITIES OF DIAGNOSIS GREATER THAN BY OTHER MEANS

That the routine use of the bronchoscope is of invaluable advantage in obscure diagnosis is being demonstrated constantly. Tumors or growths outside of the trachea or bronchial tube pressing and occluding the lumen are of frequent diagnostic occurrence. Calcareous deposits on the tracheal rings are as easily seen as though they were on the finger nails. False membrane of diphtheritic or other origin is found and removed with entire relief from the offending symptoms. Papilloma or other growths causing cough, dyspnea, reflex spasms of unwarranted severity, and either mechanically or clinically producing coughs, râles, expectorations, hemoptysis, malnutrition with greater susceptibility to other or all diseases are diagnosed and removed. Ulcerations from various causes, tuberculous or otherwise, are seen and medical agents applied. Strictures are dilated, asthma and tracheitis treated, all of these and many more are to us an open door through which we see many more possibilities in the future.

## TREATMENT OF DISEASES AND CONDITIONS BY LOCAL MEANS

Tracheitis, or tracheal bronchitis, is one of the most frequent conditions we come in contact with. Like bronchial asthma, it appears in two forms: first, as highly inflamed or mucous-covered areas of mucosa, extending around the whole lumen of the bronchi, or as patches along its walls, varying in size from a large pinhead to from one half to an inch in length; second, we may find a dry condition, the secretions, if any, having formed hard crusts or scales of a dark or greenish hue. We are rather inclined to think the second condition is simply a later development of the first. It is within the realm of possibilities to follow the course of the disease from the original infection with the organisms producing the irritation, Nature doing her part by sending leukocytes in abundance to stop the offending invasion; then tracing the outpouring of these through the mucosa with serum, constituting in this way secretion, with the corresponding tuberculous cough and expectoration. If resolution takes place, our patient is well; if not, the mucosa, as a result of the drying of these secretions and the almost continuous cough, breaks down in places and ulcerations form.

The etiology is many sided. It may be due to the occupation, as in the case of a stone or marble worker, or workmen breathing the fumes from iron molding or various vapors of acids; chauffeurs who drive continuously, inhaling quantities of dust. Bad hygienic surroundings may be the cause, or it may be produced by a condition of the upper air passages necessitating mouth breathing, in which we have lack of proper filtration, warmth or moistening of the inspired air; it may be due to sinus involvement, the continuous heavy bacteria laden discharge inflaming the pharynx and continuing by gravity or osmosis, finally reaching the larynx and trachea.

The treatment naturally divides itself into two methods: that appropriate for the first condition and that suitable for the second. We have found applications of glycerite of tannic acid, applied by tampons, the ideal treatment of the first division. These are to be used every other day, the whole lumen of the trachea or bronchi to be carefully gone over and painted. For the later development several therapeutic agents suggest themselves. We must first remove all incrustations, touching the underlying ulceration with silver nitrate, or other silver preparation, or a 10 per cent. alcoholic solution of iodin. The dry, reddened membrane responds best to stimulation by the ultraviolet ray. This is applied by means of a vacuum through the bronchoscopic tube, giving not more than one-sixteenth inch spark at any time. As you all are aware, high frequency current is one of our most refractory agents, always wishing to go the long way to a given point instead of the short; and for this reason we have had considerable trouble in perfecting a properly insulated applicator for its use. The ultraviolet ray or spark when applied in this manner stimulates the mucosa to greater activity and acts as a tonic to the underlying arterioles and nerve filaments, dilating the blood vessels to their proper caliber. I have stated the length of spark on account of the great number of electrical machines on the market, with their various ratings of voltage and amperage, thus confusing and complicating the treatment. The current acts in two ways, a one-thirty-second to a one-sixteenth inch spark acting as a stimulant, whereas a larger, stronger spark is destructive in character.

Bronchial asthma can be traced, diagnosed and treated by bronchoscopic means in a surprising number of cases, although all available literature on the subject clouds the causative factor of this condition with many theories. If we expect to find the same clinical picture in all cases, we will fail utterly, for just as patients differ in all other characteristics, so their bronchial picture varies. As Jackson[1] has truly said, in order to get an accurate picture, it is necessary that the examination be done without any anesthesia, general or local, in at least one of the sittings with each patient,

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Jackson: Pectoral Endoscopy and Laryngeal Surgery, p. 478.

so that the bronchoscopic picture shall not be altered by the application of the anesthetic. The writer reported a case[2] the causative factor of which was a papilloma situated on the carina, and the removal of which gave immediate relief and permanent cure. Another case was found to have its exciting cause in quite a large ulceration between the second and third bifurcation on the right side; the treating and healing by bronchoscopic means was followed by entire relief of the patient's asthmatic attacks. In the majority of cases, however, we have found the mucosa of the trachea and bronchi red and swollen, here and there covered with stringy, mucilaginous secretion, the removal of which, in quite a number of cases, disclosed ulcerations. I have never seen, as Freudenthal[3] records, the appearance of a scarlike mass obstructing the entire lumen of the bronchus, but have frequently seen the lumen partially occluded by such masses. I would divide the cases of bronchial asthma into two general classes: those in which we have an inflamed, dry mucosa, which may or may not have a local lesion in the tubular air passage; and those in which the mucosa is inflamed and swollen, causing a lessening of the general lumen of the trachea or bronchi, and in which the secretion is copious; the primary factor may or may not be locally situated. Dr. James Adams has justly pointed out that asthma in most cases is essentially a toxemia and no treatment can be successful without recognition of this fact. If we take into consideration the many elements which may enter into the morbid anatomy of asthma, such as the nasal passages, alimentary tract, blood, urine, malformation and toxemia from scores of causes, we can readily see that the bronchoscopic appearance of the mucosa of the respiratory tubes also must vary according to the exciting factor. When all other possible causes have been eliminated and no apparent reason assigned, bronchoscopic treatment may be resorted to with numbers of cures reported.

Ephraim[4] reports six patients cured, eleven improved and twelve not influenced by endobronchial treatment. He used a mixture of novocain, epinephrin, and normal salt solution, later reporting 133 patients treated with a spray of epinephrin and novocain with excellent results. Greenwald[5] reports good results following repeated applications of 1:10,000 epinephrin.

Personally, in the treatment of the conditions described in the first division, I proceed as follows: If the trachea is dry or inflamed, the proper treatment is to build up the mucosa as any other mucous membrane in the same condition. We first relieve the congested arterioles of the excessive blood by spraying with 1:5,000 or 1:10,000 epinephrin in normal salt solution, after which may be applied by local tampons equal parts of compounded tincture of benzoin and boroglycerid; or a silver solution, or a spray of pure liquid petrolatum with 1 per cent. ichthyol applied to all diseased areas. This should be repeated in three days and continued at that interval for five or six times to note any effect. If the case is one of the second variety, the secretions must be removed by vacuum, all masses of mucus removed, the ulcers treated with silver nitrate, 10 per cent., and a local application of glycerite of tannic acid to the mucosa. This should be repeated twice weekly.

Papilloma of the larynx in children occurs in two forms. In one form the growth disappears spontaneously, in the other, surgical or other means are required. That papilloma occurring in children is more frequently cured spontaneously there can be no question. Of those patients requiring treatment, I am permitted in this paper to speak only of other than surgical means, of which there are four methods of treatment: (1) fulguration, (2) radium, (3) Roentgen radiotherapy, and (4) medicinal agents.

Fulguration by means of high frequency current is unquestionably a curative agent to be considered in this condition and if persisted in for several treatments will effect a cure; the only disadvantage exists in the growths which lie under the cord, their position being almost inaccessible for fulguration treatment. Harmon Smith[6] reports exceedingly satisfactory results by this means.

Radium in every case thus far reported has not only effected a cure, but seemingly prevents recurrence.

Roentgen radiotherapy has never been used to any great extent, but should have a curative effect if properly given. I am rather inclined to believe that a series of applications of the Roentgen rays will limit the frequency of return in those cases which have had operative treatment.

Delevan uses applications of alcohol, starting with a 50 per cent. solution and increasing the strength as the treatment progresses. We must, however, be exceedingly careful not to have the applicator dripping. E. L. Jones has had excellent results from a saturated solution of salicylic acid in alcohol.

I have used fresh pineapple juice in one case with entire destruction of the growth, the action of the juice seeming to shrivel the papilloma; the only disadvantage is in the number of applications necessary, requiring a dozen or more. I do not think tracheotomy is necessary before using any of these applications, but all medication must be applied direct to the papilloma and not indiscriminately to any and all of the laryngeal mucosa. Papillomas in adults are on the whole more amenable to treatment than similar growths in children and decidedly less liable to return.

It is also well to remember that benign growths proliferate on the surface and do not infiltrate.

The significance of tuberculosis of the larynx, trachea and bronchi is too well known and appreciated by the profession to need emphasis or repetition. With the aid, however, of bronchoscopic methods more light and quicker diagnosis and treatment are made possible. In practically all literature obtainable tuberculosis of the larynx and trachea are considered secondary to pulmonary involvement, and yet case after case coming under my care, when examined bronchoscopically have both clinically and microscopically been diagnosed tuberculosis without showing any pulmonary lesions, either clinically or by means of Roentgen-ray examination. Granting that the lung tissue is possibly better soil for the growth of the bacillus and the trachea and larynx become involved secondarily, I am unable to see any reason why the interarytenoid tissue, the cartilages or the mucous membrane could not be primarily infected, extension and invasion of the lung tissue taking place secondarily.

Dr. George Wood in his admirable article has clearly demonstrated the frequent involvement of the tonsils with tubercle bacilli, also that the tonsils act as a

2. Ridpath, R. F.: Laryngoscope, 1914, **24**, 942.
3. Freudenthal: New York Med. Jour., June 24, 1911.
4. Ephraim: Monatschr. f. Ohrenh., 1913.
5. Greenwald: München. med. Wchnschr., 1913.
6. Smith, Harmon: Laryngoscope, 1913, **23**, 1029.

portal of entry for the disease into other portions of the body.

As the tonsil is so frequently involved, it does not require such a vivid imagination to reason that the same infection might, and does, occur primarily in the larynx and trachea; the only reason of our inability to properly diagnose the cases has been due to ourselves, and the close simulation of beginning tuberculous laryngeal inflammation to simple acute or chronic laryngitis.

With the routine use of the bronchoscope, I believe that another era has dawned for diagnosing and treating tuberculosis in its incipiency. According to Casselberry[7] one of the earliest and most destructive of the initial tuberculous changes in the larynx and one which may precede by years any more active development is the mammillated hyperplasia commencing at or near the subglottic portion of the base of the vocal process and gradually marked by a furrow in the vocal angle. This later ulcerates into vaguely outlined margins with mouse eaten edges, their base covered with granulation tissue. Infiltration and edema may now occur with extension of the disease. St. Clair Thomson reports 50 per cent. of those who die from tuberculosis show laryngeal involvement at postmortem examination, and further states that in ninety-nine out of 178 patients with laryngeal tuberculosis treated in the past three years, the disease was either arrested or improved. Brull reports 58 per cent. of the patients clinically cured and of these, 31 per cent. remained cured. While the local treatment for this condition affecting the epiglottis and larynx can be pursued by the direct bronchoscopic method, the suspension laryngoscope of Killian or Lynch is much to be preferred, affording the operator both hands free and close range examination. The treatment is to destroy the local lesion either by surgical means, with the curet or by electrically or medicinally cauterizing the area. Patients must be cautioned about the resulting edema from these treatments and instructed of its dangers. I would suggest to treat only a small portion of the infection at one sitting, thereby reducing the danger from edema. If the ulceration occurs in the trachea or bronchial tree, cauterization may be done by beaded chromic acid or trichloracetic acid.

Catarrhal hypertrophies of the mucosa appear as swollen, inflamed, spongy areas extending into the lumen of the trachea or bronchi and lessening its diameter. The secretion is usually found to be very tenacious and hard to remove. The treatment varies with the condition present, from the use of glycerite of tannic acid, or a 2 per cent. solution of silver nitrate, to the application to the swollen areas of chromic acid, used as a bead on an applicator.

Bleeding from any of the arterioles of the mucosa is easily seen. It may originate from a tuberculous lesion, malignancy or aneurysm and the treatment should be instituted according to the condition.

Stricture or stenosis of the trachea or bronchi occurs mainly from outside sources. Goiters, enlarged thymus, tumors of the esophagus, mediastinal or thoracic tumors and aneurysm may produce it, and with removal or treatment of the original cause we have a decrease or a cure of the stenosis.

Syphilis of the tracheobronchial tree may also occur. In spite of the frequent involvement of syphilitic lesions in the larynx, the finding of lesions in the lower air passages is a rarity. These lesions may be inflammatory, ulcerative or gummatous. A therapeutic or Wassermann test is, however, necessary for confirmation and exclusion of tuberculosis.

For vocal nodules, Wylie recommends very highly the use of the galvanocautery point. Great care, however, must be employed in its use. A saturated solution of magnesium sulphate repeated every other day or very small applications with trichloracetic acid will practically always give us the desired cure.

Cystomas, according to Jackson, have been known to be cured after galvanopuncture, but he also states that we must be sure to destroy the sac.

### LIMITATIONS

As all procedures must necessarily have their limitations, so we meet with finitude in bronchoscopy. Patients with valvular heart disease, those having any cardiac lesions with failure of compensation, are practically barred from a bronchoscopic examination, first, because of the excitement caused by the examination, and second, by their inability to stand the local anesthesia. Patients with long-standing cases of asthma, with the typical barrel-shaped chest and the abdominal breathing, more or less constant cough, dyspnea, thick tenacious mucus and expectoration do not stand the examination well even if the tube can be passed at all. They are also very susceptible to cocain and the examination of these patients is almost impossible without its use on account of the chronic inflammation of the membrane. People with short, thick necks with their inability to flex the head on the back of the neck are numbered among the class of bronchoscopic impossibilities. Arthritis occurring in any vertebral articulation precludes examining the trachea. In serious cases of dyspnea the application of cocain with the instrumentation would be extremely dangerous. Dyspnea may increase if the larynx is stenotic before operation, necessitating tracheotomy. Ankylosed jaws naturally would make an examination impossible. Aneurysm might not only produce pressure, with a corresponding convexity to the tracheal circumference, but with the increased blood pressure accompanying it. This condition demands great caution, not to speak of the danger of rupturing the aneurysm, an accident which occurred in one of Collier's cases. Apoplexy and arteriosclerosis are contraindications. Goiter if of sufficient size to press on the tracheal rings or cartilages will be sufficient mechanical obstruction to limit an examination. Idiosyncrasy to cocain may induce toxic syncope. Serious hemorrhage could occur only in a hemophiliac.

7. Casselberry: Infective Lymphoid Growths of the Laryngopharynx, Secondary to Sinus Suppuration, THE JOURNAL A. M. A., Feb. 13, 1915, p. 576.

**The Medical Mind.**—Our environment has often caused serious rifts in the brotherhood because, above all things, we are human. We are critical, skeptical, credulous. Let some toiler and earnest worker discover a truth and give it to the world. Its reception makes interesting reading and causes us to wonder at the strangeness of the human mind. Harvey announces the circulation of the blood; Jenner gives vaccination to us; Morton gives us anesthesia; Oliver Wendell Holmes shows us the cause and prevention of puerperal fever. All these and innumerable others are met by ridicule, angry opposition and abuse. It is not that the medical mind does not welcome the truth. It is that we are slow to see it—that we have been thinking in grooves for so long that it takes years before a new manner of thinking can be developed.—James M. Putnam, M.D., Address before Buffalo Academy of Medicine.

# THE POSSIBILITIES AND LIMITATIONS OF SUSPENSION LARYNGOSCOPY *

ROBERT C. LYNCH, M.D.
NEW ORLEANS

Suspension laryngoscopy as a procedure is so new that the proverbial pendulum has hardly begun to swing in either direction. In the first place, are you entirely satisfied with the instruments as they are shown to you at this time? Is it probable that the last word has been spoken in this regard? I may answer this by saying that I am constantly looking for a more simple instrument than the one I have been using.

It would seem that the mechanics involved is on a sound foundation and the principle as proposed by Killian is faultless, yet modern ingenuity may change our method considerably.

As we view it today, suspension laryngoscopy is not to be practiced successfully with any instrument designed primarily to sell for $10. The act of suspension is not a simple, safe operation and if we elect to suspend our patient with an instrument that is flimsy, fragile and too dainty to bear the burden, we shall lay the patient open to the possibility of a serious termination and ourselves to criminal negligence.

You must bear in mind that in order to convert the curved road from the teeth to the vocal cords, with the mouth wide open, into a straight path, there is required a considerable amount of power and a certain amount of muscle relaxation, the one bearing a direct proportion to the other; and in addition must be considered the possible variations in normal anatomy designed apparently to defeat your purpose.

This means that one must use more power than the uninitiated realizes and must apply this in a manner that is perfectly safe in its every detail. There are required rigid, strong, well-built instruments which will withstand any strain to which they are subjected.

It is an easy matter to view the larynx through a Jackson or Mosher spatula, and the application of either model in trained hands is practical without pain or danger to the patient, and not uncomfortable to the operator. In the use of this, however, one hand is busy with the spatula, and whatever further is done must be accomplished through a closed or split tube.

With suspension the chief advantage is in seeing the parts in their entirety through a wide-open mouth and in obtaining a view limited only by the boundaries of nature, with no part of the instrument in the field, and with both hands free to work as the indications require. One examines more minutely and by direct vision selected areas, using one or both hands to acquire the view. One sees plainly before him the entire interior of the oral cavity, the mesopharyngeal and hypopharyngeal spaces, the mouth of the esophagus, and the posterior and interior aspects of the larynx and trachea by such a broad view as is impossible to acquire by any other means. For instance, to look into the ventricles of the larynx either by my tilting mirror or directly, or to see the inferior surface of the vocal cords, either by a mirror placed below them or by actually lifting the cord so as to bring the under surface into view is a possibility under suspension only.

To study the larynx in health and disease by the tactile sense is an entirely new experience in this field. For one who has been trained in the old school of mirror, tongue napkin, applicator or forceps to be permitted to sit before his patient with the larynx entirely exposed in such a manner that no part will be lost sight of; to view each detail carefully, slowly and deliberately and to have the perfect assurance that nothing that the patient can do will in any way alter or disturb the view; then to proceed deliberately to study each detail by the sense of touch and sight combined; to palpate tumor masses; to feel the extent, character and depth of ulcerated and indurated areas; to determine the progress of proliferating, inflammatory and new growth formations; to study the muscular movements of the vocal cords during respiration and phonation and to search the nooks and corners for evidence of disease must awaken in him a sense of delight and satisfaction similar to that experienced by the skilled diagnostician who palpates a stone or abscess in the pelvis of the kidney or an aneurysm of the common iliac artery, or a gynecologist who recognizes an early extra-uterine pregnancy.

Now, to proceed further and to remove by dissection a tumor or cyst growing from any locality in the same manner and with the same instruments, slightly modified, as the general surgeon would select to remove a similar mass from the skin surface; to pass a bronchoscope between the vocal cords down into the trachea of an infant or young child; to remove a foreign body from the trachea by means of forceps unaided; to curet and cauterize ulcerated areas accurately without danger of injuring the normal structures surrounding the field of operation; to do a plastic operation on a selected part and to be able accurately to place stitches when and where needed; to introduce the esophagoscope or to remove from any area within the field of view a specimen of tissue for the microscope — these briefly are some of the present possibilities of suspension laryngoscopy.

It must be borne in mind that the suspension apparatus is not intended as an instrument for ordinary office examination, nor is it to be used when one wishes merely to see the lingual tonsil or the mouth of the esophagus, nor will it ever replace the use of the bronchoscope or esophagoscope. In fact, it is not intended to replace the ordinary throat mirror or the various direct spatulas or the tubes. Its field of usefulness is, as I have tried to outline, separate and distinct from all other methods known to us.

One acquires skill in its use with a little practice, but like all delicate manipulations, a certain amount of continuous practice is essential to best results. For this reason if one has but a limited field or a small clinical service in which facilities are limited, the suspension will not be a valuable addition. It is not intended for use in makeshift, impromptu operating rooms, with kitchen tables, ironing boards and the like for equipment.

Flimsy mouth gags with sliding tongue plates, having a handle and hook attached, will not replace the carefully constructed instruments presented to you by Killian and myself. So long as the principles involved remain as we now consider them, this type of instrument can yield nothing but failure to you and throw discredit on the procedure, so I caution you against them as a class.

Fixed cervical vertebrae throwing the chin near the sternum or any other similar deformity which would render it physically impossible to open the mouth or convert the curve into a straight line would contraindicate the use of the apparatus.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

A large epithelioma at the base of the tongue with cervical gland involved and one or both pillars of the pharynx indurated would likewise contraindicate its use.

In those cases in which thyrotomy and low tracheotomy have been done in persons with long necks, if the larynx seems to drop lower into the chest cavity than the normal and the resulting scar from previous operations limits the free extension of the chin, I have found it impossible to see by suspension any more than the posterior aspects of the arytenoid cartilages.

Lastly, one has the privilege of discretion in the selection of his subjects for suspension, and this he is expected to practice at all times and with due regard for patient and apparatus alike.

634 Maison Blanche Building.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. JACKSON, RIDPATH AND LYNCH

DR. WILLIAM BRICKER CHAMBERLIN, Cleveland: Just as the bronchoscope marked an advance over the older indirect method, so suspension laryngoscopy has marked an advance, but in a fairly limited field, over the bronchoscope. Dr. Lynch has made some decided contributions in the endolaryngeal instruments which he has devised. I have used a few of them, and find them exceedingly valuable. The advantages of suspension laryngoscopy must be apparent to all who have used this method. The first thing that must occur to one is the advantage of this method in having the patient suspended by a mechanical device, thus leaving both hands free for any manipulation. The very striking advantage of having two hands free came to me sometime ago, when in a rather short space of time I had three cases of open safety-pin in the esophagus. I was able in each case to dilate the opening of the esophagus with a pair of nasal forceps, and by grasping the head of the pin and giving the forceps a turn bring the eye of the pin into view. Then I grasped the eye of the pin with a second forceps, thus doing a version in the esophagus the same as we do a version in the uterus. Suspension laryngoscopy is especially valuable in children. It certainly has rendered the handling of the larynx in children a very successful operation. Much of this work could probably be done equally well by bronchoscopy but it certainly is much easier to accomplish by means of suspension. In children with suspension, a general anesthetic is necessary. In the adult one may use either a general or a local anesthetic, depending on the disposition of the patient. Both suspension laryngoscopy and bronchoscopy have their special fields. One who has examined the hypopharynx or larynx with the bronchoscope can fully appreciate the added advantages which suspension affords. You have the whole field immediately in view, and you can demonstrate this field to those who have never seen it before—men who are not experienced in the use of the laryngeal mirror. I want to enter a plea that we continue to perfect ourselves in the old method of indirect examination and indirect operation. Dr. Lynch has well said that suspension laryngoscopy is not a procedure for the country home on the kitchen table or ironing board; nor is it a procedure for the office; it is a hospital operation. Many growths in the larynx can be removed just as successfully by the indirect method as by the direct, and if any one of you had the choice between having a small papilloma of the vocal cord removed by the indirect method in a few moments in a physician's office, or going to a hospital and submitting to the discomfort of suspension, you would not be long in making up your minds. There has been such enthusiasm over bronchoscopy and suspension laryngoscopy that many of the younger men have failed to perfect themselves in the old technic of indirect examination and indirect operation. This is a great mistake.

DR. THOMAS HUBBARD, Toledo, Ohio: In the invention of instruments for bronchoscopy or esophagoscopy it is exceedingly important that they be considered from all points of view. Any instrument for grasping a foreign body that will not permit easy release is a dangerous instrument. A curved hook should not be used in the tracheal tract, because it is possible to so engage the curved hook in a ring of the trachea or bronchus that it is very difficult to let go. A right angle hook is much safer.

I want to endorse Dr. Jackson's statement that, as a rule, we should use as small a tube as possible. There are exceptions. Peanut cases are liable to develop pneumonia, and the reason is probably the multiple fragments. It is important to remove large and small fragments without a reinsertion of the tube, because of danger of subsequent laryngeal edema. With the exception of cases of that character I think the small tube is preferable. We should also bear in mind the liability of overlooking a foreign body which may be impacted in the ventricles of the larynx. The same applies to foreign bodies in the esophagus and here the large caliber tube is particularly indicated.

DR. SAMUEL IGLAUER, Cincinnati: If I understood Dr. Ridpath's statement correctly, he implied that primary tuberculosis of the larynx might not be an uncommon thing. That statement would have to be questioned somewhat. We might not be able to demonstrate tuberculosis elsewhere than in the larynx, but the real test is the postmortem test, and I believe postmortems show that primary tuberculosis of the larynx is exceedingly rare. If it were primary the prognosis would be much more hopeful. As to the use of the cautery in tuberculosis of the larynx: I have had occasion recently to look up the literature on this subject, and it seems to me that our prognosis should be much brighter now than ever before, especially if one reads the article by Ruedi of Davos. He treated over 500 patients, using chiefly the cautery according to the method of Siebenmann, which consists in destroying the entire tuberculous lesion. He claims 33 per cent. of cures in all his cases. Some of his cases, however, have been under observation too short a time to allow for such a high percentage, but nevertheless there is no doubt that we should take a more favorable view of tuberculosis of the larnyx, especially if the patient has not much pulmonary involvement. The statistics of Siebenmann are better; they have covered a larger period of time, and his percentage is 16.

I understood Dr. Ridpath to say that he could cure papilloma of the larynx in children by fulguration. I would like him to go into details as to how he carries out the treatment and how many cases he has had. I have used it but once, without any apparent results. He also spoke of radium. You may do damage with radium. I have one patient now in whom I am firmly convinced that I destroyed the papilloma, but burned the larynx to such an extent that he has a condition which is very difficult to relieve. Radium was applied three times. The third application produced the burn, so that great precaution should be taken in the use of radium inside the larnyx. I used 50 milligrams for about seven or eight hours.

Dr. Jackson believes in preparedness in bronchoscopy. I attempted to remove a screw from an abscess in the lung. It had been in situ for three years. I was unable to see anything by bronchoscopy owing to the excessive amount of pus. I therefore procured a giant magnet. A steel rod previously shaped was introduced through the tracheotomy and the magnet applied to the rod. The screw came out dangling on the end of the rod. Dr. Jackson also spoke of the method of seizing the point of an open safety-pin and drawing it into the tube. I have done this four times. Twice it was very easy because the pin was in the hypopharynx and I could remove it through the Jackson speculum. But in the two other cases the pin was in the esophagus and while I seized the point of the pin and was able to withdraw it successfully, yet when it came out it opened wider and dropped back into the mouth. As the pin was withdrawn the clasp of the pin caught on the cricoid cartilage. As an aid to bronchoscopy in very small bronchi I have devised a little instrument, a "bronchioloscope." The object of the instrument is to give an unobstructed view by sliding a flexible forceps along the outside of the bronchioloscope.

DR. H. P. MOSHER, Boston: Dr. Jackson has given us the last word on the mechanical extraction of foreign bodies.

Dr. Ridpath works along the line I have suggested and has given us his results. Primary tuberculosis of the larynx, if it is ever to be discovered by any one aside from the pathologists, is to be discovered by the man working with the lighted tube.

Dr. Jackson has forced a revolution in the method of anesthesia in the examination of the trachea or esophagus. Dr. Ridpath was not specific on this point. I would like to know whether he succeeds in making his diagnosis and carrying out his repeated treatments without any anesthetic.

Speaking of the movement of foreign bodies in the trachea, I was reminded of a case which puzzled me quite a bit. This was a foreign body in the esophagus. This child was brought in with a history of having swallowed and retained in the esophagus a nickel when the fluoroscope showed that the nickel had not passed down, but was in the usual place at the opening of the esophagus, and had an upward and downward movement of 1 to 1.5 cm. That immediately brought up the question whether I had not made a mistake and that it was in the trachea. It proved, however, at operation to be in the upper part of the esophagus. The explanation of the movement was that the nickel was large enough to distend the esophagus quite a bit, and, of course, as it extended it distended the anterior wall of the esophagus, which is a common wall with the trachea, the movement of the trachea transmitting the foreign body to the esophagus.

DR. ROSS H. SKILLERN, Philadelphia: We can all do that work and we should do it. When we do this bronchoscopic work we have to forget time entirely, because the sine qua non of the whole thing is thorough anesthetization of the parts. That takes perhaps ten to fifteen minutes with each patient. We use a very strong solution of cocain with epinephrin, and keep on using that until the larynx and glottis are absolutely anesthetized. Then introduce the laryngeal speculum and the other instruments. Dr. Lynch in his suspension laryngoscopy has given us one of the greatest advances that we could possibly have. I think I have used nearly every model that Killian devised. They were all good more or less, some of them much more satisfactory than others—they seem to improve progressively—the last model, however, was not as good in my hands as were others. We had trouble with our long epiglottis retractor. The instrument would bend; it seemed too flimsy. I got a couple of teeth one time, pulled them out of the upper jaw. But on the whole, I was always more or less in a strain while the baby was being swung up. Now, since Dr. Lynch has perfected his instrument I go about it without any fear or trembling whatever. The great advantage of his instrument is its solidness. You can put it in there and you can absolutely hold up the epiglottis. One must admit his instrument is more difficult to introduce than the Killian, because with the Killian we do the suspension first, whereas with his instrument you have to be able to perform a direct laryngoscopy before you can introduce this instrument properly. Killian made a great stride in his discovery, but it was an American who brought the instrument to its present state of perfection.

DR. GEORGE F. COTT, Buffalo: These patients return after having the bronchoscope introduced several times, not to have the procedure repeated but because they want the effect of the cocain. I know we had a few in the Killian clinic, and they came back for the cocain.

DR. W. E. DIXON, Oklahoma City: Most of these patients can be treated without any cocain at all. I find it very satisfactory to pass the bronchoscope with the Jackson instrument and treat the larynx medicinally without any cocain—much easier with the Jackson speculum than with the Bruening or the Kohler.

DR. GEORGE F. KEIPER, Lafayette, Ind.: We need not be in a hurry to pass the bronchoscope. I remember a case in which I missed a foreign body and it was because the physician insisted that I pass the bronchoscope without first obtaining a roentgenogram. As a rule, the patient declares he can locate the foreign body in the trachea or gullet, absolutely locate it, and yet when you have a roentgenogram made there is sometimes no foreign body or any evidence that there ever was a foreign body there. In locating a foreign body in the eye the patient can always tell you where it is, but do you find it in this place? Not at all. With reference to the treatment of asthma by the use of the bronchoscope, I have had some experience along that line and I have never failed to relieve obstinate cases which were not relieved by any other means by the use of the bronchoscope, following out the plan of Nowotny of Krakau and also as reported by Freudenthal, as well as by Secord Large of Cleveland and Henry Horn of San Francisco.

DR. ROBERT H. GOOD, Chicago: I would like to ask if any one has tried blocking the superior laryngeal nerve with novocain for this purpose. I did this the other day and it certainly worked nicely. This patient made no complaint on passing the bronchoscope.

DR. LEE COHEN, Baltimore: I would like to place on record a case of laryngeal papilloma in a child of 5 years, who was operated on five times in fifteen months, suspension laryngoscopy being employed. In spite of the most thorough removal, the use of alcohol, etc., the growth recurred with monotonous regularity until after the last operation, about nine months ago. Dr. Burnam, an associate of Dr. Howard A. Kelly, was requested to use radium. While the details as to dosage or the duration of each application cannot be given, it can be stated that the number of applications were four, and all of these were made from the outside over the larynx. There has been no further sign of recurrence, nor have any contractions within the larynx occurred, as has been observed repeatedly when radium applications were put inside of the larynx. Furthermore, in spite of the most extensive cutting operations, involving almost every portion of the larynx, the child's voice is perfectly normal.

DR. J. W. MURPHY, Cincinnati: I had a case in which the stem of the tracheotomy tube which the patient had been wearing became loosened and was inspired into the left lung. There were no physical signs. A few hours after the accident the only pain complained of by the patient was between the shoulder blades. I have also had several cases of bone foreign bodies in the esophagus, and all the patient could say was that the pain was in the region of the scapula. I think the internists have solved some of these problems in reference to pain in and around the stomach in which the pain is located high up near the shoulder.

DR. WILLIAM REDFIELD BUTT, Canton, Ohio: The point made by Dr. Good in reference to anesthetization of the larynx should not be lost. It is valuable. Dr. George Fetterolf of Philadelphia, a couple of years ago, read a paper on alcohol injection of the superior laryngeal nerve for relief of pain in laryngeal tuberculosis, and it works very well in those cases. The superior laryngeal nerve supplies sensation to the entire mucosa of the larynx, with the exception of the tip of the epiglottis. It can be injected with an ordinary hypodermic needle in the space between the hyoid and thyroid externally. Combining this with a little cocain applied locally within the larynx to the tip of the epiglottis gives full anesthesia of the whole larynx.

DR. ROBERT F. RIDPATH, Philadelphia: I made the statement in my paper that tuberculosis of the larynx is decidedly more common than the literature indicates. I also gave my reasons why we have not diagnosed it more frequently—partly due to our own inability, and partly due to it being masked or simulating other forms of infection of the larynx. As my paper limited my subject to the nonoperative procedures it was necessary to have as complete a paper on that subject as possible. I mentioned fulguration in papilla of the larynx. In the paper I did not state that I had used it personally. My statement is entirely a quotation. Dr. Harmon Smith of New York has used it quite successfully. Dr. Yankauer of New York also uses it. Personally, I have never used it. The treatment which I have instituted, which is entirely of a medical nature, you will find incorporated in the paper. I, of course, could not speak of the surgical end in this paper.

In the examination of asthmatic patients you will find it is practically an impossibility to examine these, especially at the first examination, without the use of cocain. You have a

person who has a cough which is irritating and frequent; you have an upheaval of the whole chest; you have also the natural nervousness of the patient due to the disease. All of these must be overcome. Personality overcomes some obstacles, but cocain overcomes decidedly more, so we use cocain. We do not use, as has been mentioned by Dr. Dixon, a saturated solution of cocain and epinephrin in these cases, but we anesthetize the pharynx and the epiglottis with a 20 per cent. cocain solution. The trachea and bronchi can be anesthetized, if necessary. This is applied with a tampon and a long applicator. In my former paper I gave my methods of applying this to the trachea. Patients do not come back for the effect of the cocain. Any one who has had cocain applied to his throat will not come back for the second dose if he did not receive some benefit from the other medicinal agents which have been applied. In fact the cocain absorbed from mucous membrane is anything but pleasing. They come back because we have helped them. I have shown you a tube or applicator which I devised for the application of high frequency ultra violet rays. We are not at this time able to give any definite data on the subject, but we think it is an agent which all investigators should look into.

DR. CHEVALIER JACKSON, Fittsburgh: One by one the various parts of the human body are being subjected, so far as possible, to examination by the eye. If the bronchoscope is ever to attain the full measure of usefulness which it deserves, it will be necessary to do the bronchoscopy either under local anesthesia or without any anesthesia, general or local. The internist, rightfully, will object to subjecting his patient to a general anesthetic, when the symptoms are slight; in other words, in that early stage in which a diagnostic bronchoscopy is particularly indicated. This is very different from the foreign body bronchoscopy, in which the operator is perfectly justified in using any anesthetic that appeals to him as best in the particular case according to his personal equation. In our clinic, Dr. Patterson and I use no anesthetic at all in children under about 10 years of age; in those above this age local anesthesia is used in bronchoscopy and direct laryngoscopy. We do not use general anesthesia for either bronchoscopy, esophagoscopy or laryngoscopy. Dr. R. H. Johnston tells me he gets good results from alypin anesthesia. In any case requiring repetition of the procedure the danger of drug habit, as mentioned by Dr. Cott, is very great, and I think all such work should be done without any anesthetic. There is one point in which our experience does not coincide with that of Dr. Ridpath. We have never yet found it impossible to do a direct laryngoscopy or a bronchoscopy on any patient who could open his mouth. Possibly our turn is yet to come. Dr. Hubbard's point in regard to the danger of seizing a foreign body with a snare or any other instrument which cannot be made to let go if it is necessary appeals to me as being exceedingly valuable. I never had that experience but once in the early days of bronchoscopy. I had a bronchoscope fastened in a bronchus by a pin being projected by cough through the holes of the bronchoscope, the point entering the opposite wall. The transfixed bronchoscope could not be withdrawn until I broke the pin with forceps, taking two fragments out separately. I have since modified the holes in the bronchoscope so that this accident cannot happen again. Dr. Hubbard's point about the peanut kernel is also excellent; but it seems to me it would apply only to peanut kernels not too large to be drawn into the distal end of the bronchoscope. Larger fragments would be crushed by the forcing shut of the forcep's jaws entering the tube mouth. I wish to emphasize Dr. Iglauer's caution in regard to the use of radium. We have not used it for anything except cancer. Overdosage, especially in case of a benign growth, might end in disaster. I think the point made by Dr. Mosher in regard to the movement of a foreign body in the esophagus is most important. Dr. Skillern's remarks about the time required for bronchoscopy deserve emphasis. Bronchoscopy hastily done in between a hard day's work on tonsils, adenoids and other routine surgery is not conducive to the best results. The experience of Dr. Dixon corresponds with that of Dr. Patterson and many others.

DR. W. R. BUCK, Canton, Ohio: I should like to ask Dr. Jackson if he has had any experience with direct laryngoscopy after thyrotomy, and other laryngeal operations.

DR. JACKSON: Any operation on the neck is apt to create adhesions that will make direct laryngoscopy more difficult; but we have not yet encountered a case in which it could not be done. We have many patients, especially children, who have had papillomas or diphtheria in whom thyrotomy or laryngostomy has previously been done. In any of these cases exposure of the larynx is made easy by inserting the laryngoscope at the side of the tongue instead of over the dorsum. This does away with the necessity of so much displacement. External esophagotomy may render esophagoscopy exceedingly difficult; but with care and patience the esophagoscope, as well as the bronchoscope, can be introduced in any patient who can open his mouth.

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# HEALTH INSURANCE AND THE MEDICAL PROFESSION

ALEXANDER LAMBERT, M.D.
Chairman, Committee on Social Insurance, American Medical Association
NEW YORK

At the recent Conference on Social Insurance, at Washington, several medical men voiced the opinion that it would be possible to give better medical service to sick persons of moderate means and to the sick poor than is given today. True, in many of the hospitals, the sick poor now receive the best that medicine can give. The rich and the well-to-do can buy an equally good service. But it is impossible for self-respecting people of small means who pay their bills to obtain from the profession the medical services they should have or for the profession to give them this desired grade of service under present conditions. The science of medicine has grown so extensively that no one man can give everything to his patients. There must be the cooperation of several men to obtain really adequate medical service today. This is best perfected in the group method as seen in the team work in well organized hospitals.

To obtain more effective measures of caring for the sick poor or for those of small means in a community has been the aim of the framers of the health insurance bill of the American Association for Labor Legislation. Whenever compulsory health insurance has gone into operation, an amount of sickness has been disclosed that has surprised even physicians working among the poor. This was especially true in England, and particularly so among the women workers. In certain investigations made in this country, for example, in that in Rochester, N. Y., made by the Metropolitan Life Insurance Company of New York City, it was found that only 63.8 per cent. of those incapacitated for work employed physicians or were being treated in institutions; only 50 per cent. of the total sick outside of institutions were in the care of physicians, and only 45.3 per cent. of those sick but able to work were being cared for. The State Charities Aid Association made a study in Duchess County to ascertain what percentage of those sick, in all classes of society, obtained adequate care. By "adequate care" is meant that service which results in the patient's recovery when that can be expected, and which is of such a character that neither the patient nor the community incurs avoidable risks. It was found that, even among the well-to-do, 19 per cent. did not receive

adequate care. Among the middle classes — those who could pay for certain services for a certain length of time — 50 per cent. were not adequately cared for, and among the poor 68 per cent. received inadequate care. In other words, to obtain the best economic human value from employees or to give the best economic value to an employer, there must be a change in the method by which medical service can be obtained, an improvement in the service rendered, and a broadening of opportunities to render this service.

Sickness in this country is still looked on as a personal misfortune. The social conscience has not yet realized that sickness is an economic calamity for which all members of the community are responsible in varying degrees, and for which the whole community pays. It bears, of course, most hardly on the individual who suffers the calamity, but the sickness of a community reduces its economic income, since it diminishes the earning power of each individual who suffers. The greatest economic asset that a workman possesses is the health that enables him to go to work each day. If he loses that, he loses his power of earning his living. Most wage earners live on a wage from which they can store up but little to protect them against individual misfortune. The great misfortune of their poverty is not that they are poor, but that when calamity or misfortune befalls them, their poverty changes to destitution and they must suffer the destitution or turn to public charity for aid. If, then, it is possible to develop a health insurance scheme in which sickness is regarded as a calamity that may befall any one, and in which every one has joined together to sustain and aid those who are temporarily stricken, the dire effects of sickness to the family or to the individual are warded off, poverty ceases to turn into destitution, and proper convalescence is possible to the sick individual that he may regain his damaged health and be again of a value equal to his former value as an economic asset in the community. This is the justification from a social point of view for the change from the economic conditions under which we live to those which a compulsory health insurance scheme would bring about in a community.

In any health insurance scheme, intricate machinery is necessary, and physicians are an essential part of this machinery. The service rendered by the medical profession must be on a business and not on a charity basis. The public has long considered it a part of the physician's duty to give his time and knowledge to charity whenever the very poor were concerned. This has been willingly and gladly given; but because it has been so willingly given is no justification for asking that physicians under the health insurance law shall not be justly and adequately remunerated for an adequate service. Physicians must earn their livelihood in carrying out the provisions of the law, and they are justified in demanding that the standards of this livelihood shall not be lowered from the standards they already possess. These are the standards of the professional classes of the community, and not always those of the daily wage earner.

All successful measures dealing with sickness insurance require concentration of authority in local control. Hence, under the contemplated law, the fund which distributes the cash benefits and medical benefits is not a state fund or any generalized corporate carrier, but a local mutual benefit fund, the directorate of which is composed equally of employers and workmen, with a state representative. The state health insurance commission divides the state into districts, none of which shall contain less than 5,000 persons who are subject to compulsory health insurance. There shall be as many local funds in each district as shall be deemed necessary. Each fund will have special whole time referee medical officers paid by the funds, whose duty it shall be to decide when the insured shall receive the sick benefits and when the sick are well enough to go back to work. These medical officers must be paid a salary, as they are not permitted at any time to engage in private practice. They report to the health officer on the local medical committee any unhealthy conditions found or any infractions of the sanitary code or sanitary ordinances. They have the duties of a health inspector to investigate and report, and they can be removed on charges for failure to perform such duties. They are, however, paid by the funds and responsible to them, and are thus hired, by both the employers and employees to judge of the occurrence of sickness and of its limitations, and to give a general supervision during its duration.

The standards under which these medical referees are appointed are decided by the advisory medical board to the commission, one member of which is the state commissioner of health. Examinations for appointment are held either by the state civil service board or by some other adequate board. The medical referees work under regulations agreed on by the directorate of the funds and the local medical board. It is thus possible to obtain high grade men who have a grasp of preventive medicine and sanitation and also of internal medicine and surgery. This is a broader specialism than is possessed by the average physician and surgeon today.

It has been strongly urged that all men doing executive referee work should be executive officers of the state commission and not of the funds, on the ground that they would be more impartial, that they would be less apt to lean too much to the side of the funds or to the side of the patient, and that both employers and employees would be satisfied with any decision so long as it was given by an impartial person representing the central power of the state. Theoretically this might be so. Practically, officers appointed by the commission would not be responsible to the funds, and could not be held to strict accountability by the funds. It would be a loss of local control and local authority. The local funds represent both employer and workman, and it is necessary that they should control the men on whose decision depends the expenditure of their money. A state referee would not be removable by the funds either for unsatisfactory or for incompetent work, and if he were incompetent, it would not be any advantage simply to transfer him from one fund to another. In our system of government, appointments by governmental commission are more liable to be purely political than appointments by local funds, because the self-interest of the funds would force them to protect themselves against poor appointments. This self-interest in money matters, this self-interest in the expenses of these mutual funds, is the active driving power to keep up the standards of service in sickness insurance. Employers and workmen will be unwilling to see their earnings wasted, and this factor will inevitably prove the force necessary to keep up essential standards.

The personal care of the insured is carried on by panels of physicians. Every legally qualified physician in the state may, on application, be put on the panel

or list of physicians willing to do health insurance work in his district. Any physician living on the edge of a district or any other physician so desiring may enter his name on one or more panels. The proposed law provides that if the medical work in a district is done by salaried physicians or by physicians in establishment funds, the requisite panels shall be formed of these same physicians. The insurance provided is not only for the workmen but also for his dependents, and there is contemplated free choice of physicians by the insured, within reasonable geographic distance. All persons provided for in the law must be on the list of some physician. Free choice of physicians by any patient must be subject to the willingness of the physician to take the patient. The local medical committee must have the power to assign to some physician all patients who have not become definitely settled on some physician's list. Probably there must be a limit of the number of patients that a panel physician may treat. If this is not done the English error of having a small fraction of physicians care for a majority of the patients, producing hurried medical service and inadequate care to the sick, will be repeated. Five hundred families, or 1,000 insured, or some such ratio as this, which would give to each physician an average of twenty or thirty patients a day to see, would be a useful maximum. This is a matter, however, that could well be left for executive regulation. The panel physicians must group themselves together, as such, in order that they may appoint their representatives on the local medical committee and also that the interests of the physicians who are on the panels may be protected by organization. Under such organiaztion or through existing medical societies these physicians, should they so desire, may contemplate collective bargaining. This collective bargaining should be permitted, but it should not be the only method by which medical service could be arranged. Panel physicians must give the sick adequate care for ordinary needs. The medical referee as an officer of the funds takes from the panel physicians all responsibility of deciding when a patient is sick enough to receive cash and medical benefits, and when he is well enough to cease to receive these. Experience abroad has shown definitely that it is impossible to combine this responsibility with the daily care of the sick in one physician. If the physician who has the daily care of the patient must also decide when the patient is to go on the funds or off the funds, as it is called, there is incessant friction. There is always the accusation of collusion with the funds to drive sick people to work or of collusion with the patient to put healthy men on the funds or to keep them there. Hence the necessity of the medical referee officer of the funds deciding all questions involving beginning, duration and cessation of benefits.

The usual body with which the directorate of the fund will deal in medical matters is a definitely organized local medical committee. The various regulations necessary for the control of all medical matters in any district, that is, regulations referring to panel physicians, to dispensaries and hospitals, to specialists, and dentists, to the relationship between the panel physicians and the medical referee officers and between doctors, druggists and nurses, and all such relations as are necessary for the intricate running of a health insurance law must be supervised by the local medical committe, composed of representatives of the panel physicians and of representatives of the dispensary and hospital attending staffs, and also — and here is a very important point — a member of the local health department or the local health officer. This committee has the power to pass on and report to the directorate of the local fund on all regulations affecting medical matters promulgated by that directorate. In the majority of cases these two boards will agree. But if they fail to agree, an arbitration committee is to be formed consisting of a representative of the local sick fund, a representative of the local medical committee, and a third person who shall be appointed by a county judge or by a justice of the supreme court. This arbitration committee has the final decision in these matters, unless there be an appeal on either side to the advisory medical board and through that to the commission. It seems necessary that this local medical committee should have the veto power to be exerted only against the appointment of an unfit medical referee officer by the local sick fund. It should not have the power, nor should it be permitted to recommend medical referees to the fund, but it should be able to prevent unfit referees from being appointed. This doubtless would be rarely used, but it should be in existence.

There should be in many localities, if not in all, a corps of consultants to furnish second opinions. This is especially true of small towns which lack dispensary service and may lack sufficient hospital accommodations. The consultants may be connected with dispensaries or hospitals, or may not be. They should act as referees in purely medical and surgical questions whenever there is an insistent demand or an insistent appeal from the decision of the medical referee officer of the fund.

Under the health insurance law the dispensaries would be places for group medicine, that is, for the gathering together of all specialists, and consulting opinions in general medicine and surgery may be secured. Any patient can be sent by any physician to the dispensary to obtain special treatment or an opinion on some special condition, or he may be sent to a general practitioner at the dispensary for an opinion on diagnosis or therapeutics. This second opinion — that is, this consultation — should be granted to the patient whenever it is demanded by the patient, by the panel physician, by the medical officer of the funds, or by the directorate of the funds. Under the panel system every patient is under the care of some panel physician, and therefore panel physicians cannot treat in dispensaries in every day medical and surgical care the patients of other panel physicians. Panel physicians can act as consultants in the dispensary, but it would not seem possible to have the ordinary advice in internal medicine in the dispensary as is done today. If the panel physician is restricted in the number of patients he can treat, and if patients are not permitted to change their panel physicians except at stated intervals, patients certainly cannot go from physician to physician or from dispensary to dispensary to be treated for ordinary ailments. If they are going there with the knowledge of their physician for a second opinion on diagnosis or therapeutics, the dispensary will prove a boon to them and to the community; but if any other condition is allowed, the dispensaries will prove a never ceasing source of trouble, friction and confusion. The different specialties can be followed in the dispensary, or the specialists outside the dispensaries can send their patients to men in the dispensaries for the consultant's opinion, if they so desire. But here again the division must be made to prevent incessant confusion. The dispensaries will be a boon because they will develop

into the best examples of group medicine. Free dispensaries will cease to exist. The medical and surgical care furnished in dispensaries will be paid for the same as to other physicians under the insurance act. If, in the community, there remain patients who are not under the insurance law, who desire to go to the dispensary, that is a question outside of the insurance law, and regulations must be promulgated and enforced to regulate such special groups of patients.

There must also be ample hospital accommodations for patients who need hospital care. Patients sent to hospitals must be attended by members of the staff who are regularly enrolled on the panels. A reorganization of the basis on which physicians do their work in municipal hospitals, and even in private hospitals, would have to take place. At present, both public and private hospitals accept fees for the treatment of patients under the workmen's compensation laws, but it is forbidden the attending staff to accept any of these fees, and these are kept from them and go to the hospital. The exploitation of physicians should cease. The men working under the act should receive their just dues for the care of these patients, the hospital charging its just due for their nursing, food and lodging. But hospital care and medical care should be distinctly separated, and the whole of hospital nursing expenses should not be charged as is now done to medical fees.

We come now to the consideration of the state medical advisory board. This forms part of the general state supervision, and should be taken into consideration with the state health insurance commission. This advisory board is composed of representatives of the various state medical societies and the state commissioner of health. It passes on all regulations relating to medical benefits and on the relation of physicians and surgeons to the insured, and the commission waits for the approval of this board before putting these regulations into effect. The commission may put temporary regulations into effect for not more than six months. To this medical advisory board are referred all disputes regarding medical benefit that have come from the local committees on appeal through the arbitration committee to the commission. This medical advisory board also decides on the standards on which the local medical referee officers shall be appointed, and gives these standards either to the civil service commission to hold the necessary examinations or to some other authorized body whose duty it is to examine these medical referee officers for the local funds. In the law as now contemplated the state commissioner of health is a member of this advisory board, but if thought advisable the secretary of the state board of health could be designated. The state board of health has the power through him to see that in the standards promulgated by the medical advisory board for the local medical referee officers there shall be included standards of sanitation and preventive medicine which will enable these referee officers to act in an intelligent manner in regard to the questions of preventive medicine and sanitation in their daily duties in supervising the care of the sick under the local funds. Moreover, the local medical officer or the representative of the local board of health is on each local medical committee, and the regulations under which the work is done in each district has been passed on by the central health authorities. This health insurance law does not detract or take away in any manner from the powers already possessed by the state health department or by any local health department in the state. The powers of both the state and the local health departments are widely autocratic and should be so, and they are not hampered or diminished in any way by this act as contemplated. This act, as a matter of fact, broadens the field of preventive medicine and sanitation and gives wider and better opportunities than is now possible for the health departments to put into effect their regulations, because the opportunity is here offered to promulgate standards by which men may be appointed and regulations under which officers shall work which shall contain all the necessary provisions for the problems of preventive medicine and for the control of sanitation. The idea has been widely disseminated that this health insurance law does not provide for the great problems of preventive medicine and for the sanitation of the community. If it does not, it will be due to the failure of the members of the health department of the state and of the local departments to grasp the broad opportunities here offered through the control of their representatives by means of the standards under which they are appointed and the regulations under which they work. There is here both local and central control. If there arises any dispute between two local committees about sanitary matters, the local power over them possessed by the local health department can quickly force a decision. Such power exists today, and there is nothing in the health insurance act to diminish that power. If disputes arise between two committees of separate districts, the state health department has control and can exert it. The same power is possessed by state and local health departments under this law as is now possessed, and can be exerted, and the same responsibility rests with them to exert it.

Under the health insurance law there are also advisory boards to the central state health insurance commission from the local sick funds and also from the trained nurses, appointed by the state society of trained nurses, where one exists. The organization of an efficient form of nursing under this law is a necessary feature and one which will be formulated. The regulations would probably run parallel to the medical regulations, because harmony between these two sets of regulations will be necessary. There will also have to be regulations regarding the prescribing of drugs, both for the economical prescribing of the necessary medicine and the economical provision of surgical supplies and the various appliances, such as eye glasses and trusses. These are part of the medical benefits, and are paid for by the local funds. They, therefore, come in under the regulation of the board of directors of the local sick fund. All regulations regarding them will have to be promulgated in general by the commission, and, if necessary, modified under the advice and guidance of the directorate of the local sick fund. These details, however, should be regulated by executive order of the commissioners and not be put into the fundamental organic law of the state. There are matters that need quick action, and therefore should not be in that part of the law which requires legislative action to change, but should be left to the discretion of the commission in order that they may be changed at any time.

The state health insurance commission appointed by the governor is composed of a chairman, a physician and a third member. The medical profession has wisely insisted that it shall be adequately represented

on all committees before which their interests would come for decision, and in the scheme here outlined this adequate representation of the profession has been provided and safeguarded in a manner that is just and fair to the profession.

The question of remuneration to physicians is one that is not yet decided. Some members of the profession insist that it shall be definitely stated in the law. They are unwilling to leave it to executive regulation after the law is passed. The experience of physicians in some states, especially in Massachusetts and in New York, under workmen's compensation laws, has made them realize that their interests were not safeguarded. These laws were passed before physicians realized the responsibilities that would come to them or what their duties would be under the law. One of the most noticeable features of the workmen's compensation laws today is the totally inadequate surgical care provided by the law for the really seriously injured person, and the inadequate remuneration which any honorable physician may obtain when caring for any person who is seriously injured.

The methods of remuneration should be discussed. There are four possible ways of payment: by straight capitation, by visitation, by some variation or combination of these two, or by salaried district physicians. By straight capitation is meant that the doctor is paid so much per patient per year. This is the scheme which is employed in England, and is the scheme of the ordinary lodge practice and club practice, as seen in this country. It is a method of payment which has always produced inadequate service, unsatisfactory to both physician and patient. Those who require the greatest amount of care and those who are really sick are the ones who are liable to receive disproportionately less care than they should have. These evils are inherent in the method, and it is the condemnation of these evils which has caused such vigorous condemnation and resentment in the profession against the lodge practice and contract practice of today. Everywhere an underpaid physician giving inadequate and hurried service is held in contempt by his patients and by his profession. The only recommendation for this method is that it is the cheapest and also the easiest method for the funds to calculate how much medical care will cost.

The payment by visitation is acknowledged to be the most expensive method, since the physician treats his patient, as in ordinary private practice, and charges each visit pro rata against the funds. Expensive though it may be, unless it is proved to be prohibitive, the expense per se is not a valid objection against this method. Under this method there is no question that the patients receive the best care. It has always proved to be more satisfactory than any other method to both patients and doctors. The time honored relationship of confidence and privacy between physician and patient, which from time immemorial has been considered desirable, is best conserved under this method of remuneration. In certain towns in Germany, such as Bremen, this is the method employed, and its operation has there proved satisfactory. In certain rural districts of Germany it is also the only method under which medical care is given. It is urged against it that with an unknown morbidity of disease there is always an unknown expense facing the funds. This objection sounds stronger than it really is in fact, because after a few months' trial the varying morbidity of a district can be fairly well gaged, and unless there is some unforseen outbreak of an epidemic, the morbidity as calculated runs along with very little variation of error. It is further urged against this method that unnecessary visits may be made. If this proves to be true there must be a procedure by which a dishonest physician may be dropped from the panels and, unless reinstated, prevented by law from receiving further remuneration from the insured under the health insurance law. The local committees and the physicians on the panels must protect themselves against the action of dishonest physicians. This has been done in England and Germany, and can be successfully done here.

It is possible that a compromise between the methods of capitation and visitation may be put in force. It is a more complicated method than either one of the other two, but, like all compromises, it may appeal to many people. The method referred to is that by which the local sick funds give a lump sum to some responsible medical society. Physicians give their services by visits and by work done, and calculate each visit and each kind of service as so many points and charge the total number of points against the medical society. At the end of each quarter each physician hands in his record of points made, and the total number of points of services given are divided into the total lump sum of money, and each point has a certain value for that quarter, the value of each point varying from quarter to quarter according to the amount of work done. The disadvantage of this method is that the more work that is done the more the value of each point diminishes, and there comes a time when, with the amount of money remaining stationary, a period of great morbidity, such as an epidemic, would cause double the amount of work to be performed, and the value of the point would be one-half its value in ordinary times. Hence a physician is paid by the law of diminishing returns the greater amount of services he gives. This is unquestionably unjust and soon forces the same situation of an overworked physician, underpaid, giving hurried service. To obviate this, it is possible to agree that if the morbidity of a district increases above a certain amount, physicians shall be remunerated per point of service done at the rate of the average value of the points as shown in the previous three years. This would prevent the injustice of this law of diminishing returns in payment referred to above, and would be a just remuneration on a just basis. Of course, under this proposed law there would be 100 per cent. collection of all just medical fees, a factor which should be taken into account in considering the remuneration of physicians.

The medical organization as outlined here is a well balanced scheme by which the quarrels and friction produced under the health insurance laws of the old world are avoided. It gives to the medical profession the standing and the privileges for which the English physicians had to fight — that of adequate representation throughout the entire scheme on the committees before which their interests will come. It prevents the incessant wrangling of the German scheme because of the false position in which the physician is there placed, in which he is forced not only to give the daily care to his patients but also to decide when they are put on and off the sick fund. In this scheme this decision is relegated to the special medical officer of the funds. This medical officer has other functions which safeguard the interests of the patients. Because it is his duty to decide whether or not the patient can con-

time to receive cash benefits, he is in constant touch with the panel physician, and if affairs are not going well medically he can at all times obtain the necessary second opinion and aid to bring about the best care of the patient.

All possible disputes between panel physicians and the funds or between patients and the funds are safeguarded by arbitration committees, and the whole scheme of health insurance is delegated to local organizations of funds and physicians by which the real work can be best carried out. The proposed plan avoids the English mistake of huge insurance carriers with their thousands of insured scattered helter skelter in masses or individuals throughout the entire country. All health insurance to be successful must be locally controlled, and the medical benefits and medical nursing are done by local control under this present scheme.

The scheme outlined takes what is best in the German method of giving medical benefits sufficient to guard the health and the best interests of the patients. It furnishes not only daily care, but develops the means by which a patient may obtain a second opinion for diagnosis or for therapeutics whenever it is desired. The scheme as here promulgated in the dispensaries and hospitals offers not only a better method than is now in vogue, but also the very scheme through which medicine is developing and through which it is bound to develop to the highest degree in the near future—that of group medicine. It offers in districts, in which there are no dispensaries or hospitals, consultants from whom the necessary second opinion may be obtained even though the development of group medicine has not proceeded so far as in more densely settled communities. This health insurance scheme is also linked firmly together with the present existing powers of the health departments. The standards through which the local officers of the funds are appointed are supervised by the health commissioner himself before being promulgated. In each local medical committee there is a health officer with the full powers of the health department behind him, and there is in the law a provision that if the medical officers of the funds do not properly report and do not take proper cognizance of sanitation and preventive medicine in their daily work, it is a cause sufficient to bring about their trial and removal from their position. Every endeavor has been made to uphold the hands of the present health authorities and continue their present great powers for good. As far as organization is possible, as far as it is possible to give power and responsibility, they have been adequately linked together. Every endeavor has been made to localize responsibility for the performance of each duty, and with this responsibility the endeavor has been made to give adequate power to perform it. This is true of the ordinary every day medical and surgical work of the profession and equally true in the great fields of preventive medicine and sanitation of the health department. There remains only the personal equation of the human machine; and the human personal equation until put to the trial is always an unknown quantity.

**Medical Fossils.**—Occasionally I meet with men who are still living professionally in their undergraduate days, reading the same old books, and writing the same old prescriptions, both blind and deaf to the changed environment. Fortunately the more intelligent of the public easily recognize these fossils and appraise them at their true worth. They are interesting as relics of the past, but worthless in the present.—V. C. Vaughan, M.D., *Science*, Dec. 8, 1916.

# A CONSIDERATION OF THE SEROBIOLOGIC REACTIONS AFTER FIVE YEARS OF OBSERVATION *

CHARLES R. BALL, M.D.
ST. PAUL

Somebody has said that the serobiologic reactions have created a new science. It may also be said they have given us a new symptomatology. If we regard them as symptoms and not as reactions, they become much easier of understanding and interpretation. The lack of understanding concerning them has been due chiefly to two things: First, we do not know the source of the so-called antibodies which are necessary for a positive Wassermann, or the origin of the lymphocytosis or increase of globulin content which occurs not only in the spinal fluid but in the blood as well. Naturally, then, all our knowledge thus far in regard to these reactions has been obtained by the inductive method, that is, drawing conclusions from individual observations and striking an average or a percentage to be used in the formulation of general rules about them from the sum total of observation.

In any knowledge obtained in this way, it is natural to expect that new observations will be reported from time to time which require some modification of previous conceptions. In the second place, in the application of general laws to any particular class of cases, there are always the exceptions to be taken into consideration. These reactions or symptoms were often found where, from the nature of the case, we did not expect them to occur, or, on the other hand, absent in cases in which, according to our previous knowledge, we thought they ought to be. If, then, we view these reactions as symptoms, which they certainly are, and study their interpretation in connection with and as we do other symptoms in any case, much of this past confusion in regard to them will disappear. We do not expect to find all the symptoms of a disease present in every case. Not every case of meningitis presents a Kernig's sign or rigidity of the neck. Furthermore, not every case of rigidity of the neck is diagnosed as meningitis. Nystagmus is a common symptom of multiple sclerosis, but it would be a serious mistake to regard every case in which the symptoms of nystagmus was present as a case of multiple sclerosis. Tremor is an important and frequent symptom of paralysis agitans, yet we would fail to recognize many cases of this affection if we excluded the diagnosis because of the absence of tremor.

We must learn to think of the serobiologic symptoms as we do all other symptoms and realize that their value and the interpretation which we give them is not an isolated one, but depends largely on the syndrome accompanying them. In this new symptomatology, as in the old, it is not in the typical cases in which the symptoms are present that difficulty in interpretation arises, but in those in which these symptoms are irregular or only partly present.

In the beginning of the Wassermann era the impression was quite general that a negative Wassermann made the diagnosis of syphilis extremely doubtful.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* This article and the one by Dr. Pilsbury which follows complete the symposium on Syphilis of the Nervous System, which was begun with the articles by Drs. Schaller, and Riggs and Hammes last week.

We are still often confronted with the statement that the Wassermann is negative, as if the final word with reference to syphilis in the case under consideration had been spoken. We know positively at present from records made by hundreds of observers all over the world that in syphilis of all stages a serum Wassermann is found in only about 65 per cent. of the cases. We do not often find it in the primary stage. In the secondary stage it is nearly always present, and in the tertiary in perhaps from 40 to 50 per cent. of the cases. In tabes this symptom is present in from 60 to 70 per cent., in cerebrospinal syphilis in 80 per cent., and in paresis in from 95 to 100 per cent. of all the cases. In my own work, in sixty cases of syphilis without symptoms referable to the nervous system, the Wassermann was positive in thirty-nine, or 68 per cent.; in eighty-one cases of cerebrospinal syphilis, in forty-three, or 53.3 per cent.; in fifty-seven cases of paresis, in fifty-three, or 92.7 per cent., and in twenty-six cases of tabes, in thirteen, or 50 per cent. It ought to be perfectly plain, from a perusal of such reports, that in a large number of cases of syphilis the serum Wassermann is absent, so that we are able to say positively that the absence of this symptom in the blood serum proves nothing either for or against the assumption of specific disease.

Observation[1] has shown us that a definite relationship between the activity of the syphilitic processes and the Wassermann reaction, as well as the other reactions in the blood and spinal fluid, does not always exist. Late syphilis, bone syphilis, tabes and cerebrospinal syphilis with extensive involvement and active symptoms may give negative reactions, while, on the other hand, cases with strong positive reactions occur in persons who are apparently in good health. A case of paresis, in a complete remission, may give just as strong a positive Wassermann, or just as much of an increase of the lymphocytes in the spinal fluid as an active and rapidly progressive one. There are numerous cases which, after a mild treatment, lose their positive reactions, only to have them return after a short interval. On the other hand, there are cases which, before the beginning of treatment, are negative, but afterward become positive. In one of my cases, a positive serum Wassermann, after the administration of salvarsan intravenously, became negative and remained so, although the clinical condition gradually grew worse and the patient finally died. In another case, a positive reaction remained positive in spite of vigorous treatment, although the symptoms entirely disappeared. Practically all of the authorities at present regard a positive Wassermann as proof of a syphilis either past or present, and the weight of opinion considers that it is present.[2] In other words, a positive Wassermann is thought to mean the presence somewhere in the system of living spirochetes. The exceptions to this rule are so few, about 0.5 per cent., and the other diseases in which it occurs are so easy to differentiate from syphilis by the symptoms and history, that their importance may be considered negligible.

The spinal fluid reactions, especially in obscure conditions, and where the nervous system is involved, are of much more practical value, in both diagnosis and prognosis, than the serum Wassermann. It is quite the vogue now to have a serum Wassermann made on the patient; but to have a thorough examination of the spinal fluid is comparatively rare. In all cases with obscure symptoms referable to the nervous system, the spinal fluid examination is of vastly greater value. In my work I have been much impressed with the large number of cases in which what may be called the cardinal symptoms of nervous syphilis, such as pupil anomalies, Romberg sign, absent knee jerks, and sensory disturbances, were absent, and the symptoms present were few in number and obscure in character. In this category may be mentioned especially neuralgias and paresthesias of the fifth nerve, sciatica, Bell's palsy, persistent insomnia, symptomatic migraine, and choreiform movements not unlike the type occurring in Sydenham's chorea. In many of such cases the serum Wassermann is negative, and unless a spinal fluid Wassermann is made, only serves to mislead one.

CASE 1.—A man, aged 40, whose only somatic symptom was a twitching of the left cheek and lower eyelid, subjectively had no complaints. Both the physical and neurologic examinations were negative. A history of a syphilitic infection, dating back fifteen years, was obtained. The serum Wassermann was strongly positive. Likewise, the spinal fluid in 0.2 c.c.; the lymphocytes were 80/3; the globulin + +, and the colloidal gold test gave the typical paretic curve. Within six months from the date of this examination, although specific treatment was begun immediately and continued during this entire period in the form of weekly injections of mercuric salicylate, the patient began to get irritable and quarrelsome, his sleep was disturbed, and he soon became violently insane. This case ran a galloping course, and in a little more than a year the patient died of paresis.

This case is interesting for the reason that six months before the appearance of any somatic or psychic symptoms of paresis, how much longer, no one knows, the serobiologic symptoms of paresis were all present. It is further interesting from a therapeutic standpoint because specific treatment was begun at once, and on the first appearance of mental symptoms, salvarsan intravenously and salvarsanized serum intraspinally were administered and then followed with a course of sodium nucleinate injections, but without any result in staying the progress of the disease.

Case 2 illustrates the incongruity often existing between the clinical and serobiologic symptoms. It also shows how misleading a serum Wassermann and the symptoms which we formerly had to depend on for our diagnosis may be, as well as the value of the spinal fluid examination in every suspicious case.

CASE 2.—T., man, aged 45, married, American, salesman, examined March 2, 1916, had one brother who died of paresis and another who had an advanced tabes. The patient had been married seventeen years, and had one child, living and well; his wife had had no miscarriages. Fifteen years before he had a chancre and mild secondaries; treatment at that time consisted of yellow mercurous iodid pills for about two years. Since then he had had potassium iodid and some mercurial inunctions at intervals, but had not taken any systematic course after the first two years. The only complaint at the present time was a sensitiveness in the upper part of the nose internally and a stuffy feeling in the head, as if he had a cold. These symptoms were not constant. The nose and throat specialist whom the patient consulted could find no explanation for them in the nasal passages. The patient visited me, not because of these symptoms, but for the reason that the death of the brother from paresis frightened him, and he wished to find out if any traces of his former syphilis were still present. The serum Wassermann, a luetin test and the neurologic examination all

1. Von Wassermann, A., and Lange, C.: Zur Frage des Entstehens der Reaktions producti bei der Serodiagnostik auf lues, Berl. klin. Wchnschr., March 16, 1914.
2. Nonne, M.: Syphilis und Nerven System, Ed. 3, p. 813.

resulted negatively. He was then persuaded to have an examination made of his spinal fluid. This gave a strongly positive Wassermann with 0.2 c.c., the minimal quantity of fluid, a Nonne + +, lymphocytes, 172/3, and the colloidal gold test reacted in the paretic zone. Up to the present time the patient's condition continues good.

It is interesting to note that the origin of the infection in all three brothers was different. This argues against the doctrine often expressed of a certain type of syphilis which possesses a special virulence for the nervous system and in favor of the theory of lessened family resistance which is so often observed in other infectious diseases.

In a certain type of cases in differential diagnosis the globulin and lymphocyte reactions have been of more value to me than the Wassermann. In many cases with organic nervous involvement the Wassermann has been absent in both the serum and spinal fluid, even when 1 c.c. of the fluid was used, and the diagnosis had to be made from the history, clinical symptoms and the spinal fluid findings without the Wassermann. In such cases, with either no history or a negative history of specific infection, the variations in intensity of these two spinal fluid findings, carefully considered, in conjunction with the clinical symptoms, have often proved the deciding factor in making the diagnosis. The following cases are illustrative of this:

CASE 3.—B., aged 26, farmer, seen in consultation Dec. 26, 1915, could give only an imperfect history on account of his mental condition. There was nothing of importance in the family history. It was learned from his father that he smoked and drank to excess, but on the advice of a physician had stopped drinking about five months before. In June, 1915, he began to have paroxysms of pain in the region of the left kidney which were thought to be due to gravel. In November, he had a very severe attack of pain lasting several hours. From this time on, at night, he began to whistle and sing, and kept up such a disturbance that his room had to be changed so the other members of the family could sleep. During the day he seemed rational. This condition remained the same until December 4, when he began to have trouble in passing urine. He became unable to void it, and some difficulty was experienced in catheterizing him. At the time I saw him, December 10, he was delirious all of the time, and had involuntary actions of both bladder and bowels. His temperature, although it had been normal for the two days previous to my visit, varied between 101 and 101.6. The pulse ranged between 90 and 112. The patient was rather emaciated and had a slight cough. Heart and lungs were negative. The urine contained albumin and quite a number of red blood cells. The inguinal glands were distinctly enlarged; also, two epitrochlear, about the size of a split pea, were present on each side. There was a general tendency to a coarse tremor. A suggestion of ankle clonus and a positive Babinski on the left side were the only somatic symptoms observed in the neurologic examination. The serum Wassermann was negative. A spinal puncture was made, December 11. On that day the temperature reached 103. The spinal pressure was slightly increased. The spinal fluid was clear; Nonne, +; lymphocytes, 20/3; spinal fluid Wassermann, negative with 0.2 and 1 c.c. of fluid. The colloidal gold test gave what might be called a freak reaction, with no change in the first tube, a reddish blue in the second, blue in the third, and no further changes in the remaining tubes. On the same day of the puncture mercurial inunctions were begun. On the following day, the patient became worse and went into an unconscious condition in which he remained for a week.

In this case the enlarged epitrochlear and inguinal glands, as well as the history of development, with delirium coming on at night and disappearing during the day, led one to suspect syphilis. On the other hand, the emaciation, slight cough, and the high temperature caused one to feel that tuberculosis was also a probability to be reckoned with. From the history and the neurologic examination as well as the spinal fluid findings, it seemed quite certain that the case was a meningitis and that this meningitis was either syphilitic or tuberculous in character. After careful consideration of both the reactions and symptoms, tuberculosis was excluded, chiefly because of the mild degree of intensity of the globulin and lymphocyte reaction. The position was taken that in any case of tuberculous meningitis in which the symptoms were so extensive and severe, both the globulin and lymphocyte reactions would be much increased. The mildness of these reactions was thought to be absolutely out of harmony in a tuberculous meningitis manifesting such acute and extensive symptoms. The negative Wassermann in the blood and spinal fluid was given the importance only which should be given to any negative symptoms. We know absolutely that we cannot exclude syphilis because the serum Wassermann is negative, and we must come to the same opinion relative to the spinal fluid Wassermann. If it is absent we must not, for this reason alone, exclude the possibility of nervous syphilis, but merely apply to its absence whatever other differential diagnostic value this absence may possess. It does sometimes have a very particular value, which is well brought out in the next case:

CASE 4.—T., aged 35, merchant, married, with two healthy children, stated that his father died from tuberculous meningitis, which was the significant thing in the family history. The patient himself, five years before, had a tuberculous affection of the lungs which was at this time apparently quiescent. He also gave a history of a specific affection dating back ten years. He seemed in good health up to the time of the present illness. He had been sick two weeks when I saw him. He then complained of a pain in the head and back of the neck. His eyes were very sensitive to light. He was extremely nervous and restless, with no appetite and bowels constipated. His temperature ranged from 99 to 101. The only objective symptom elicited in the physical and neurologic examination was a slight rigidity of the neck muscles. The serum Wassermann was negative. The spinal pressure increased. The spinal fluid Wassermann in 0.2 and 1 c.c. was also negative. The globulin was strongly positive, the lymphocytes 100/3. The goldsol test showed the greatest change in the dilutions from 1:160 to 1:640. In this case the absence of the Wassermann in the spinal fluid, taken in connection with the marked increase of the lymphocytes, was very significant. According to our past experience all spinal fluids in specific cases with so large a lymphocyte increase had given a positive Wassermann. For this reason it was thought that syphilis could be safely excluded. Accordingly the diagnosis of tuberculous meningitis was made. The subsequent history of the case confirmed this diagnosis.

The Wassermann reaction is, of course, the most reliable of all serobiologic symptoms when present in differentiating between nervous syphilis and other organic disease of the nervous system; but it is so often absent, even in the spinal fluid, and there are so many times when the distinction must be made without it, that I have come to depend a great deal on the globulin and lymphocyte reactions in my work. The lymphocyte reaction has been especially valuable. The diseases in which it occurs with a symptomatology that might be mistaken for syphilis are not numerous, and even then there is usually some factor which in itself is distinguishing, as in the case just reported of tuberculous meningitis, with a negative Wassermann and the large lymphocyte increase.

The normal number of lymphocytes in a cubic millimeter has been often stated to be from nothing to five, with a borderland of nine or ten.[3] According to my observation, I believe this estimation of the normal number of lymphocytes too high. Five lymphocytes to 1 c.mm. would give fifteen in the 3 c.mm. in the Fuchs-Rosenthal counting chamber, while the usual count in normal cases for the whole space is certainly much less than this. In the following case a pupil anomaly and the lymphocyte count were the most important differentiating symptoms:

CASE 5.—G., man, aged 40, clerk, unmarried, had been sick about four weeks when he came under my care; he was then incoherent, disoriented as to time and place, and unclean in his habits, with an inclination to expectorate on everybody and everything near him. He complained of some headache, which was increased by coughing or sneezing. His appetite was excellent, his mental state one of exhilaration and good humor, his memory very poor. On account of the mental condition, no past history or history of a present illness was obtainable. Physically, his condition was good. Pulse and temperature were normal; urine examination was negative. Station was bad, and when he attempted to walk, he staggered like a drunken man. He did not lie still for a second when awake, but kept twitching and jerking, like a person with an aggravated case of chorea. The right pupil was larger than the left, but both reacted to light. No other pupil anomalies were observed. The patient's articulation was good, but he was coarse and loud in his talk. Spinal pressure was not increased. Both the serum and spinal fluid Wassermanns were negative. The globulin reaction was also negative and the lymphocyte count was 18/3, just one more to the cubic centimeter than is given as normal. Brain tumor or cerebrospinal syphilis seemed the most probable conditions to be considered. However, on account of the number of lymphocytes, the latter diagnosis was made. This patient made a good recovery with mercurial inunctions and intravenous injections of salvarsan. After his recovery a history of specific infection of twelve years' duration was obtained.

When even a slight increase in the number of lymphocytes is often so important in deciding the diagnosis, the necessity for obtaining the spinal fluid absolutely free from blood can be readily appreciated. The faintest trace of it will give a positive Nonne and a lymphocytosis, and if not detected, lead to erroneous conclusions.

The study of these reactions in the spinal fluid was at first almost entirely confined to patients manifesting nervous symptoms. Recently, however, a great many observations on their behavior in the spinal fluid in primary and secondary cases of syphilis without any nervous symptoms have been made. M. Fraenkel[4] was among the first in reporting on the spinal fluid reaction in fifteen cases of untreated secondary syphilis, without evidence of nervous involvement. He found the Wassermann positive in five of these cases. Dreyfus and Assmann, in a large number of examinations in secondary syphilis, found that the spinal fluid was normal in only 22 per cent. of the cases. In later examinations on the same patients, 75 per cent. of them gave negative reactions.

Wile and Stokes,[5] in an article on the spinal fluid in secondary syphilis, conclude that from 60 to 70 per cent. of all cases which progress to the secondary stage show some change in the fluid, which indicates a nervous involvement. In a later article on the same subject they say: "We now feel our figures in our former article were too conservative and in all probability every case of secondary syphilis has an involvement of the nervous system." A consideration of these observations and others similar in character indicates to what extent the study of these reactions have changed our conceptions of syphilis and especially the syphilitic invasion of the nervous system. A nervous syphilis has always been regarded as belonging distinctly to the later manifestations of that disease. In the light of these recent investigations we may now believe that the nervous system shares in the general invasion of the body during the primary and secondary stages. In the great majority of these cases either as a result of treatment or a naturally developed resistance, recovery takes place and the spinal fluid becomes normal. Dreyfus has ascertained that in approximately 12 per cent. of the syphilitics, without nervous symptoms, examined by him, the spinal fluid has continued pathologic. He compares this percentage with the 12 per cent. of specific organic nervous affections found by Mattauscheck and Pilcz among 4,000 army officers who had contracted syphilis. In commenting on this comparison, Nonne[6] says that the conclusion lies near that these cases in which the fluid remains pathologic are the ones which later on develop the syphilogenic nervous affections. The conception at present of the development of a specific nervous disease is then a latency, dating back to the primary and secondary stages, which continues latent until some exciting cause transforms the latent process into an active one. Clinical experience is also in harmony with this view. In one of my cases, a cerebrospinal syphilis developed several weeks after a severe head injury. The patient was apparently well before his accident, but soon afterward he complained of a severe headache and became mentally very dull. He also developed a hemiparesis on the right side. The spinal fluid gave an increased globulin and lymphocyte reaction. These symptoms entirely disappeared with specific treatment.

In regard to head injuries, Nonne says, "It has been known for a long time that they can cause an outbreak of brain syphilis, and especially the development of gummatous brain tumor has been observed following such injuries." It is not rational to suppose in these cases that the nervous tissue became infected with spirochetes after the injury from some distant focus. The only logical explanation is that these germs were already present in the injured tissues in a latent state, and the injuries so lessened the normal tissue resistance that the latent process was converted into an active one.

In prognosis, as has been stated, and as we have seen in the cases reported, neither the number of the reactions present nor their degree of intensity bears any direct relationship to the rest of the symptomatology. In Case 3 the syphilitic process was an exceedingly acute and progressive one, yet the only reactions present were the globulin and lymphocyte, and these were mild in character. On the other hand, in Case 2 there was entire absence of subjective and somatic symptoms and yet the reactions were all intensely positive. Case 1, with a slight twitching of the face as the only somatic or subjective evidence

3. Nonne, M.: Syphilis und Nerven System, Ed. 3, p. 99.
4. Fraenkel, M.: Weitere Beiträge zur Bedeutung der Auswertungsmethode der Wassermann-reaktion in Liquor cerebrospinalis, Ztschr. f. d. ges. Neurol. u. Psychiat., **11**, Nos. 1 and 2.
5. Wile and Stokes: A Study of the Spinal Fluid, with Reference to the Involvement of the Nervous System in Secondary Syphilis, Jour. Cutan. Dis., September, 1914, p. 607.
6. Nonne, M.: Syphilis und Nerven System, Ed. 3, p. 139.

of nervous disease, in which all the reactions were strongly positive and which in a short period of time developed into a galloping paresis, would seem to point to a gloomy prognosis when such conditions exist. Nonne has reported in this connection thirteen cases in which the reactions were positive, both in the blood and in the spinal fluid. Three of these cases were progressive in character; the other ten remained stationary over a period of five years. The following case is quoted from Nonne:[7]

A man, aged 62, formerly a captain, has been a tabetic for fifteen years. Mercurial treatment, twelve years ago. Since then no specific treatment. The pupils do not react to light. Knee jerks are absent. Hitzig's zone. Four years ago Wassermann in blood, + + +. Wassermann in spinal fluid, + + with 5 c.c. of fluid. Globulin, +; lymphocytes, +. At present practically no change in either the reactions or somatic findings. The patient feels well and works every day.

This case is not an isolated case, but one of a series of cases which Nonne has observed.

The next case is a report on the reactions in an old case of tabes, the first symptoms of which appeared about twenty years ago:

CASE 6.—This case has gradually progressed in a halting way during all of these years and is still advancing. The chief discomforts now are a high degree of ataxia, lightning pains which are exceedingly severe in character, and loss of bladder control. Feb. 15, 1915, the serum Wassermann was slightly positive; spinal fluid examination pressure, normal; globulin, negative; lymphocytes, 3/3; colloidal gold test typical in the syphilitic zone; spinal fluid Wassermann, negative in 1 c.c. March 1, 1916, a little over a year later, the serum Wassermann was negative; spinal pressure, normal; globulin, negative; lymphocytes, 6/3; spinal fluid Wassermann, negative; colloidal gold test still in the syphilitic zone. Except for the colloidal gold test, the spinal fluid reactions, at both examinations, might be considered normal, yet during the period between these examinations, this patient has been practically bedridden because of the high degree of ataxia and has suffered most severely from lightning pains.

When such contradictory observations as I have cited are compared, the whole subject of the interpretation of these reactions from the standpoint of prognosis seems to be in confusion. The confusion, however, is not so complete as it appears. Many cases of cerebrospinal syphilis of the genuine type have been reported in which the spinal fluid became normal, either spontaneously or as a result of treatment. In these cases, so far as I know, there have been no relapses reported. On the other hand, observations thus far indicate that cases in which there is a pathologic fluid are never safe from relapsing. It seems quite plain that we cannot consider any case of syphilis as having recovered, and this applies as much to primary and secondary syphilis as it does to the nervous type until the spinal fluid becomes normal. Absence of symptoms and repeated negatives in the blood cannot be regarded as recoveries in those cases in which there is still a pathologic spinal fluid. For this reason no patient should be dismissed by the syphilologist and treatment stopped without a complete spinal fluid examination. In the so-called cases of parasyphilis, such as tabes and paresis, the outlook for obtaining normal spinal fluids, with present methods of treatment, except in the old *abgelaufene* type (cases in which the disease has spent itself), such as the last case reported, is rather hopeless, and in treating these cases this should be realized.

7. Nonne: Syphilis and the Nervous System, Ed. 3.

The variations in intensity of the reactions in such cases or the changing of some of the positives into negatives as a result of treatment have, in my opinion, very little value from a prognostic standpoint. The following explanation of the reactions in the type of cases represented by Cases 2 and 3, in which such an incongruity exists between the reactions and the symptoms, is suggested. In Case 3 the process is an active one and the invasion of spirochetes is limited in extent. In other words, it is an active syphilitic process of recent origin and with a good prognosis. In the type represented by Case 2, the process is an extensive one. The whole central nervous system is invaded, but up to the present time it is latent. Sooner or later something will occur to make it active, and then the course will be rapid and severe, as it was in Case 1, in which the conditions were somewhat similar.

## CONCLUSIONS

The serobiologic reactions should be regarded in the same manner as the symptoms in a clinical picture. They furnish only a part of the information, which must be carefully weighed in connection with all of the other facts obtained. Often when other symptoms fail, they are found to be present, and give the clue to the proper diagnosis. On the other hand, we must not forget that the reverse is sometimes true and they are absent, and then we must depend on the other symptoms for our diagnosis. In atypical cases, hard and fast rules cannot be formulated for these reactions any more than for the other symptoms.

A spinal fluid examination should be made in all cases in which symptoms are present which are referable to the nervous system, unless the etiology of these symptoms is definitely known.

An examination of the spinal fluid is the surest means we have at present of discovering the presence of latent syphilis, and in all cases of syphilis before the patients are discharged from further treatment, this ought to be done, in both early and late cases.

In the absence of other symptoms, its findings form the best criteria in deciding when it is safe to stop treatment. In the so-called cases of parasyphilis the last statement does not apply because of the impossibility with the present methods of therapy of obtaining a normal spinal fluid.

In nervous syphilis, without other symptoms, a normal spinal fluid means a good prognosis and a recovery; a pathologic one, a latency which at any time may become active.

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**Reporting Tuberculosis.**—The *Monthly Bulletin* of the New York State Department of Health reviews the excuses that physicians give for failing to report cases of tuberculosis, and states that these cannot be regarded as valid by the department. All cases, no matter what the organ involved or the stage of the disease, must be promptly reported to the health officer on the special report card, even though the diagnosis was made only at death or necropsy. The coroner's certificate of a person dying from tuberculosis may be accepted by the health officer in lieu of a report, but in this instance the health officer must make out a report and send it to the department. A laboratory report of sputum positive for tuberculosis will not be regarded as doing away with the necessity of sending a regular report card. When the clinical symptoms justify a diagnosis of tuberculosis, the case must be reported by card, even though the laboratory findings are negative for tubercle bacilli. If afterward the case proves not to be tuberculosis, the physician may notify the health officer to that effect.

# MERCURIAL MEDICATION WITH SPINAL DRAINAGE *

L. B. PILSBURY, M.D.
LINCOLN, NEB.

This is intended to be a brief paper, and few references will be given. The literature of syphilis of the nervous system is now so extensive that it properly falls into various categories, though sharp divisions are not always made into clinical, serologic, etc. We seem to be no nearer a valid line of distinction between paresis and cerebrospinal syphilis than we were, and most authors are becoming very cautious in their assertions as to what does and what does not constitute paresis. There is no reason to suppose that there is any essential difference in the spirochetes in these two conditions, but there is experimental evidence to sustain the view that the spirochete which attacks principally the brain is somewhat different from the one which cripples the heart or assails the liver, as witness a recent communication from the Army Medical School to Dr. Archibald Church.[1]

On anatomic grounds, Dunlap[2] characterizes general paralysis as "a subacute or chronic inflammatory and degenerative process which goes through and through the great central nervous organs," whereas "the varieties of cerebral syphilis on the other hand, for the most part, play around the surface of the central nervous system, instead of going all through it." In making a serologic distinction, Kaplan[3] considers the colloidal gold test of more value than the Wassermann, and of course the findings in any case of nervous syphilis may have been altered by treatment. Kolmer[4] says, "In cerebral syphilis the blood serum, and particularly the cerebrospinal fluid, will react positively less frequently than in general paralysis"; but this is doubtful. It is sometimes said that the cell count runs higher in cerebrospinal syphilis, but the largest count which I have seen, 360 cells, occurred in the fluid of a patient with undoubted paresis. Darling and Newcomb,[5] in four of five cases of cerebrospinal syphilis, failed to find more than six cells, and in a fifth case never found more than 100. They lay stress on the great variation in cell count in these conditions but state that it was no greater in the one condition than in the other. They, with Weston,[6] had previously reported three cases of cerebrospinal syphilis in which the cell count never exceeded 3 per cubic millimeter. Two of the cases now being reported have never shown to exceed 5 cells per cubic millimeter, and one has varied from 130 to 360, all being cases of paresis.

There seems to be no reason for making a distinction in treatment between paresis and cerebrospinal syphilis, and no extravagant hopes can be built on any form of treatment as yet devised in well developed cases of either condition, though prolonged remissions, even in general paralysis, may be expected with vigorous treatment in early cases. Gilpin and Earley[7] assume that mercury and arsenic given by any of the ordinary routes fail to reach the cerebrospinal fluid, but this is probably not invariably true, as very small amounts of arsenic have been reported. For example, Barbat[8] found 1 part per hundred thousand of metallic arsenic in the fluid immediately following the administration, presumably intravenous, of a full dose of neosalvarsan. Gilpin and Earley ask, "Is it not reasonable, then, to think that if we reduce the pressure within the cerebrospinal cavity we may succeed in bringing foreign substances through the capillary walls and thus secure the direct effect of drugs such as arsenic and mercury on the nerve tissue itself?" The plan carried out on three patients reported at that time was repeated lumbar puncture, performed every week or every two or three weeks, together with mercurial inunctions. Paresis, taboparesis and tabes were represented, and the results were quite encouraging.

On theoretical grounds it does not seem that the removal of from 20 to 40 c.c. of fluid once every week or two should have more than a very transient effect in reducing pressure, and it seems probable that spontaneous variations in pressure may occur from time to time, though doubtless in less degree. The fluid is probably rapidly replaced after withdrawal, and it is possible, of course, that the very rapidity might have a tendency to carry over foreign substances which happened to be circulating in the blood at that particular time. At any rate, the method seemed worth trying, and ten cases of paresis, taboparesis and cerebrospinal syphilis were so treated, that is, the patients were given mercurial inunctions, 1 dram six days in the week, and were punctured every two weeks with few variations. In most cases the inunctions were continuous. They were not selected patients, but would represent about the usual hospital run, and some would be a severe test for any form of treatment. The amount of fluid withdrawn varied from 20 to 35 c.c., the Wassermann was performed with 1 c.c. of fluid by Dr. Clarence Emerson, and the cells were counted in a Thoma-Zeiss chamber with the high power. On the whole, the results are not striking, and similar effects might reasonably be expected without spinal drainage. One of the patients is decidedly better and several are slightly so, but the one who improved the most had an alcoholic as well as a syphilitic factor. None have been treated in this fashion for more than about four months, and none for less than ten weeks, and this is perhaps not time enough for a maximum amount of benefit.

## REPORT OF CASES

CASE 1.—White man, aged 35, laundryman, married, no children, always intemperate, admitted Jan. 10, 1916, acquired syphilis at the age of 19, and has had gonorrhea several times with resulting stricture. He had a little treatment following chancre, but probably not very much. He first showed signs of mental disturbance in July, 1915, after drinking heavily. He was excited, nervous, sleepless, suspicious and threatening. He spent ten weeks in a general hospital before commitment, and received specific medication, including two intraspinal treatments. On admission he was found well oriented, with little disturbance of conduct aside from irritability. Right pupil was large and rigid to light, left moderately responsive to light and distance. Knee jerks were exaggerated, cremas-

* Read before the Section on Nervous and Mental Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Church, Archibald: Some Modern Views of Syphilis of the Nervous System, THE JOURNAL A. M. A., May 20, 1916, p. 1596.
2. Dunlap, Charles B.: The Pathology of General Paralysis, Am. Jour. Insan., October, 1914, p. 249.
3. Kaplan, D. M.: Serology of Nervous and Mental Diseases, Ed. 1, 1914, p. 191.
4. Kolmer, John A.: Infection, Immunity and Specific Therapy, Ed. 1, 1915, p. 462.
5. Darling, Ira A., and Newcomb, Philip B.: The Correlation of Clinical and Serological Findings in Paresis and Cerebrospinal Syphilis, Am. Jour. Insan., January, 1916, p. 449.
6. Weston, Paul G.; Darling, Ira A., and Newcomb, Philip B.: The Colloidal Gold and Other Tests Applied to the Spinal Fluid in Psychiatry, Am. Jour. Insan., April, 1915, p. 773.
7. Gilpin, Sherman F., and Earley, Thomas B.: Drainage of Cerebrospinal Fluid as a Factor in the Treatment of Nervous Syphilis, THE JOURNAL A. M. A., Jan. 22, 1916, p. 260.
8. Barbat, J. H.: Finding of Arsenic in Cerebrospinal Fluid Following Intravenous Administrations of Neosalvarsan, California State Jour. Med., 1915, **13**, No. 11; abstr., THE JOURNAL A. M. A., Dec. 18, 1915, p. 2199.

teric, abdominal and gluteal reflexes absent. Slight muscular unsteadiness was present. The Wassermann reaction was positive in blood serum and later in spinal fluid (Table 1). A diagnosis of cerebral syphilis was made. At present the right pupil is large and fixed, while the left reacts only a very

TABLE 1.—CEREBROSPINAL FLUID IN CASE 1

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 2/10 | ++ | ++ | ..... | 40 | 25 | ++++ |
| 3/24 | +− | ++ | + | 24 | 30 | ++++ |
| 3/30 | +− | ++ | + | 34 | 35 | ++++ |
| 3/24 | ++ | ++ | + | ? | 30 | ++++ |
| 4/ 6 | ++ | ++ | + | 31 | 30 | ++++ |
| 4/20 | + | ++ | + | 30 | 25 | ++++ |
| 5/ 4 | + | + | ++ | 16 | 30 | ++++ |
| 5/18 | + | + | + | 27 | 35 | ++++ |
| 6/ 1 | + | + | + | 28 | 25 | ++++ |

little to light. The knee jerks are about as they were, and there is about the same amount of muscular unsteadiness. The patient is fairly reasonable in his conduct, and cooperates well in treatment.

CASE 2.—White man, aged 52, carpenter, wife dead, three children, admitted Sept. 28, 1915, denied intemperance and venereal infection. Trouble had been steadily progressing for about two and one half years, ataxic gait, speech, etc., and delusions that people were stealing his tools. On admission the patient showed disorientation, impairment of memory and judgment and slight euphoria. Argyll Robertson

TABLE 2.—CEREBROSPINAL FLUID IN CASE 2

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 2/15 | ++ | ++ | ..... | 35 | 15 | ++ |
| 2/29 | ++ | ++ | ++ | 37 | 25 | ++++ |
| 3/14 | ++ | ++ | ++ | 40 | 25 | ++++ |
| 3/28 | + | ++ | + | 23 | 25 | +++ |
| 4/12 | ++ | ++ | ++ | 46 | 25 | ++++ |
| 4/26 | − | +++ | ++ | 24 | 20 | ++++ |
| 5/10 | + | ++ | ++ | 24 | 25 | ++++ |
| 5/24 | − | + | ++ | 39 | 22 | ..... |

pupils were present, knee jerks absent, speech was defective and writing impossible. On account of extreme ataxia, the patient was kept in bed. Blood serum Wassermann was reported negative, Oct. 12, 1915. A diagnosis of taboparesis was made. Spinal fluid later was positive (Table 2). This patient has not improved in any essential respect under treatment.

CASE 3.—White man, aged 55, farm laborer, divorced, three children, admitted Jan. 11, 1916, acknowledged alcoholic intemperance, but denied venereal infection. At time of admittance he was confused, disoriented, stupid and appar-

TABLE 3.—CEREBROSPINAL FLUID IN CASE 3

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 2/17 | − | ++ | ..... | 223 | 20 | +− |
| 3/ 2 | − | ++ | + | 123 | 20 | +− |
| 3/16 | − | + | + | 120 | 25 | − |
| 3/30 | − | + | + | 120 | 25 | ++ |
| 4/13 | − | + | +− | 63 | 25 | + |
| 5/ 1 | + | + | + | 73 | 30 | ++++ |
| 5/15 | + | + | +− | 64 | 25 | ++++ |
| 5/29 | +− | + | + | 38 | 30 | ..... |
| 5/16 | ..... | ..... | ..... | Blood serum | | ++++ |

ently demented, but later much improved mentally. The left pupil was large and fixed, the right reacted to light and distance. Knee jerks were a little exaggerated, cremasteric and abdominal present, gluteal absent, no speech defect. A provisional diagnosis of alcoholic insanity was made, after spinal fluid findings, changed to cerebrospinal syphilis with alcoholism. January 21, Wassermann was positive in blood serum; February 17, doubtful in spinal fluid. Patient is better mentally and cell count has descended from 223 to 38 per cubic millimeter.

CASE 4.—White man, aged 43, salesman, admitted Jan. 21, 1916, married, two children living, wife had a miscarriage at six months, one seven months, fetus lived a few hours, one child, the first, which died at 12 days and another which died at 10 years, having abnormally large head and deformed lower extremities; presented a history of intemperance and of gonorrhea, but none of syphilis. Three weeks before com-

TABLE 4.—CEREBROSPINAL FLUID IN CASE 4

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 2/19 | + | ++ | ..... | 72 | 25 | ++++ |
| 3/ 4 | + | ++ | + | 63 | 30 | ++++ |
| 3/18 | + | ++ | ++ | 60 | 25 | ++++ |
| 4/ 1 | + | + | ++ | 70 | 32 | ++++ |
| 4/15 | + | + | ++ | 77 | 35 | ++++ |
| 4/28 | + | + | + | 50 | 30 | ++++ |
| 5/12 | + | ++ | + | 57 | 35 | ++++ |
| 5/26 | + | ++ | + | 57 | 25 | ..... |
| 6/ 9 | + | ++ | ++ | 91 | 25 | ++++ |
| 2/18 | ..... | ..... | ..... | Blood serum | | +++ |

mitment, the patient complained of sudden feeling of distress on lifting a heavy weight, and soon afterward became increasingly talkative and affirmed that an uncle in Chicago had left him $100,000. He said he was well and his wife was ill and that he had perfected a scheme to keep his balance in the bank the same without making fresh deposits. When admitted, patient was a little euphoric and showed defect of judgment, but not of orientation and apparently not of memory. The right pupil was slighly larger than the left, but both were rigid and very small, even in absence of light. There was central dimness of vision in the left eye field, described as a misty appearance. There was history of probable meningitis at the age of 3, followed by squint which later disappeared. Knee jerks were present; cremasteric, abdominal and gluteal reflexes absent. There was no ataxia, no marked tremor or unsteadiness, no speech or writing defect. March 18, blood Wassermann was +++. A diagnosis of paresis was made. In a general way the patient certainly shows some improvement, that is, he is more reasonable, his delusions are less in evidence, and he has regained much of the flesh that he had lost; but there is no marked change in the spinal fluid.

CASE 5.—White man, aged 48, cigar maker, married, one child aged 20 years, admitted Oct. 25, 1915, gave a history of

TABLE 5.—CEREBROSPINAL FLUID IN CASE 5

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 2/19 | + | + | ..... | 5 | 30 | − |
| 3/ 4 | +− | − | − | 1 | 30 | ++++ |
| 3/18 | +− | − | − | 4 | 25 | − |
| 4/ 1 | +− | − | − | 2 | 20 | − |
| 4/15 | + | +− | − | 4 | 22 | +++ |
| 4/28 | + | − | − | 4 | 25 | ++++ |
| 5/12 | + | − | − | 1 | 25 | ++++ |
| 5/26 | +− | +− | − | 1 | 20 | ..... |
| 6/ 8 | +− | +− | − | 2 | 25 | − |
| 2/18 | ..... | ..... | ..... | Blood serum | | + |

probable chancre occurring a good many years before. There was mention in the physician's return of sexual abnormality for ten years, the exact nature not known. The symptoms began about July, 1915, with sleeplessness, restlessness, later hallucinations of hearing and delusions of plotting. There was no marked alcoholic factor. When admitted, the patient showed no disturbance of orientation, but had delusions of influence and acknowledged hearing voices, especially at night. He was good-natured, but not euphoric. He had a noticeable speech defect and a little defect in writing. The knee jerks were slightly exaggerated, but pupils normal, cremasteric and abdominal reflexes present. He was paroled from November

24 till January 16. The blood Wassermann was positive, March 18. A diagnosis of paresis was made. The spinal fluid Wassermann was variable, and never more than 5 cells were present. The physical condition is essentially unchanged; hallucinations and delusions are less prominent, and efficiency is increased. The patient takes care of the clothing room in the ward in which he resides.

CASE 6.—White man, aged 44, laborer, divorced, two children, admitted Sept. 18, 1915, gave a history of nervousness, speech difficulty and mental confusion for about three months before commitment. When admitted he was quiet, a trifle

TABLE 6.—CEREBROSPINAL FLUID IN CASE 6

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 2/23 | + | −++ | + | 110 | 30 | ++++ |
| 3/ 8 | + | −++ | + | 213 | 25 | +++ |
| 3/23 | ++ | +++ | ++ | 170 | 35 | ++++ |
| 4/ 6 | ++ | +++ | ++ | 180 | 30 | ++ |
| 4/20 | + | −++ | + | 140 | 30 | ++++ |
| 5/ 4 | ++ | ++ | ++ | 156 | 30 | +++ |
| 5/18 | ++ | ++ | ++ | 10 | 30 | ++++ |
| 6/ 1 | + | ++ | ++ | 130 | 30 | ++++ |
| 2/23 | ..... | ..... | ..... | Blood serum | | ++++ |

confused, without definite or systematized delusions. There was no marked disorientation, but some impairment of memory as evidenced by inconsistent statements. Alcoholic intemperance and venereal infection were denied. The pupils were slightly unequal and very sluggish to light, knee jerks exaggerated, cremasteric and abdominal reflexes present, movements and station a little unsteady, and speech and writing defective. February 23, the blood Wassermann and also the spinal fluid were ++++. A diagnosis of paresis was made. The number of cells has been quite variable, but there has been little variation in the intensity of the Wassermann reaction. The pupils are now almost rigid to light, knee jerks very much exaggerated, tremor and unsteadiness greater than at time of admittance. The patient cannot be said to have shown the least improvement under treatment.

CASE 7.—White man, aged 38, telephone man, married, who had had no children, and whose wife had had no miscarriages, who was not intemperate and who denied venereal infection, admitted Aug. 22, 1914, was well oriented, his memory was good, no delusions were present, but his condition was not fully appreciated. The pupils were equal, but rigid to light. Knee jerks present, also abdominal, cremasteric and gluteal reflexes. There was considerable tremor, and well marked ataxia. There was considerable increase of globulin and

TABLE 7.—CEREBROSPINAL FLUID IN CASE 7

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 2/24 | + | −+ | ++ | 52 | 25 | ++++ |
| 3/ 9 | + | −+ | ++ | 41 | 25 | |
| 3/23 | + | − | ++ | 33 | 25 | ++++ |
| 4/ 6 | Specimen contained blood | | ..... | 50* | 35 | ++++ |
| 4/30 | + | −+ | ++ | 60 | 20 | ++++ |
| 5/ 4 | + | + | ++ | 40 | 20 | ++++ |
| 5/18 | + | + | + | 60 | 25 | +++ |
| 6/ 1 | + | + | + | 130 | 25 | ++++ |

* Other than red cells.

albumin, and 115 cells per cubic millimeter in the spinal fluid. A diagnosis of paresis was made. Mercurial inunctions and potassium iodid were ordered. There was a mild paretic seizure, Oct. 14, 1915. The number of cells has varied considerably, but the number was high at the last count, and the Wassermann still strongly positive. The pupils are still rigid, the left knee jerk much exaggerated, and the patient is more tremulous and unsteady now than he formerly was. He still does not appreciate his actual condition.

CASE 8.—White man, aged 47, tailor, married, three children, admitted Nov. 20, 1915, had no history of intemperance or venereal infection. About two years before commitment his gait became peculiar and he began to drop things. He became very nervous and so forgetful that he could not go on a simple errand and bring back what was wanted. About one year before commitment, spinal fluid was negative. When admit-

TABLE 8.—CEREBROSPINAL FLUID IN CASE 8

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 2/29 | + | + | − | 0 | 30 | +++ |
| 4/ 1 | + | + | + | 1 | 25 | − |
| 4/15 | +− | + | − | 4 | 25 | − |
| 4/28 | − | −− | − | 0 | 22 | ++++ |
| 5/12 | + | +− | − | 1 | 30 | ++++ |
| 5/26 | + | +− | − | 1 | 25 | ..... |
| 6/ 9 | + | + | − | 3 | 30 | + |
| 1915 | | | | | | |
| 12/ 6 | + | +− | ..... | 4 | 25 | −(Blood serum−) |

ted, patient was disoriented and showed considerable mental confusion, impairment of memory, judgment, etc. The pupils reacted to light and distance, the knee jerks were a little exaggerated, and there was slight defect in speech, writing and gait. A diagnosis of paresis was made. December 6, the spinal fluid showed a slight increase in globulin, but there were only 4 cells per cubic millimeter, the Wassermann reaction was negative in both blood and spinal fluid. Since then the spinal fluid Wassermann has been positive three times and negative twice, and the number of cells has never exceeded four. There has never been more than a slight increase of albumin and globulin, and the Ross-Jones test was positive only once. The knee jerks are now more exaggerated than

TABLE 9.—CEREBROSPINAL FLUID IN CASE 9

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 3/14 | −++ | +++ | +++ | 290 | 25 | ++++ |
| 3/28 | ++ | +++ | ++ | 210 | 28 | ++++ |
| 4/12 | ++ | +++ | ++ | 130 | 30 | ++++ |
| 4/26 | ++ | ++++ | +++ | 277 | 25 | ++++ |
| 5/10 | + | +++ | +++ | 203 | 28 | ++++ |
| 5/24 | + | +++ | +++ | 199 | 30 | ..... |
| 6/ 8 | +++ | +++ | +++ | 360 | 30 | ++++ |

they were, while tremor and muscular unsteadiness are more pronounced.

CASE 9.—White man, aged 40, laborer, single, with history of intemperance, but none of venereal infection, said to have delusions of God directing his movements, etc., when admitted, Oct. 11, 1914, had ideas of grandeur and unlawful detention, ideas of reference and hallucinations of sight and hearing. The pupils reacted moderately, knee jerks were exaggerated, abdominal and cremasteric reflexes were present and gluteal absent. Later on, disturbance of speech appeared. A diagnosis of paresis was made. Blood Wassermann was positive when admitted. The spinal fluid Wassermann is still

TABLE 10.—CEREBROSPINAL FLUID IN CASE 10

| Date, 1916 | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Ross-Jones Test | Cells | Amount, c.c. | Wassermann, 1 c.c. |
|---|---|---|---|---|---|---|
| 3/16 | + | + | + | 46 | 30 | ++++ |
| 3/30 | + | + | + | 20 | 25 | ++++ |
| 4/13 | + | + | + | 17 | 25 | ++++ |
| 5/ 1 | + | + | + | 80 | 25 | ++++ |
| 5/15 | + | + | + | 85 | 30 | ++++ |
| 5/29 | + | + | + | 56 | 26 | ..... |
| 3/16 | ..... | ..... | ..... | Blood serum | | ++ |

++++ and the patient is no better physically, though he is more tractable than he was at one time. June 8, the spinal fluid contained more cells than at any previous time, 360 per cubic millimeter.

CASE 10.—White man, aged 36, painter, single, formerly intemperate, admitted March 14, 1916, one year before com-

mitment had an attack of mental disturbance which lasted about three weeks. Shortly before commitment he became excited, sleepless and confused, with hallucinations and illusions. When admitted, patient acknowledged having had both gonorrhea and syphilis at the age of 18, but said he was treated and cured. Delusions were present and some mental confusion. Pupils were sluggish to light, knee jerks exaggerated, tremor present, speech and writing a little defective. The Wassermann reaction was ++ in the blood and ++++ in the spinal fluid. A diagnosis of paresis was made. The fluid Wassermann was the same at all examinations since admission. Cells have varied from 17 to 85 per cubic millimeter. The right pupil is now a little larger than the left and decidedly sluggish to light. Otherwise the patient is about the same, except that he is steadier and more efficient in his work.

## ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SCHALLER, RIGGS AND HAMMES, BALL, AND PILSBURY

DR. J. HENRY BARBAT, San Francisco: During the past two years I have been doing experimental work regarding the permeability of the meninges to drugs. Patients were given salvarsan, neosalvarsan, and later arsenobenzol intravenously, and immediately after the injection as much spinal fluid as possible was withdrawn by lumbar puncture, usually as much as 60 c.c. The second half of this fluid was tested for arsenic. Twenty-four hours after the first tapping, 20 c.c. of spinal fluid were withdrawn. Within one hour after the injection of arsenobenzol, 20 c.c. of blood were taken and the serum separated from the clot. These specimens were all sent to the Hygienic Laboratory at Washington to be tested for arsenic. About four fifths of the arsenic is fixed in the body cells within one hour after its intravenous administration, leaving only one fifth in the blood, a proportion of about 1 : 100,000. When neosalvarsan is used a slightly larger proportion of arsenic gets into the spinal fluid than with arsenobenzol. In my series of cases the analyses showed an average of 10 per million arsenic in the blood, largely in the serum. In the spinal fluid which was drawn twenty-four hours after the administration of the drug, there was found from a trace to 10 per million, the average being one fourth per million. The second half of the fluid drawn immediately after the injection of arsenobenzol showed traces of arsenic in 40 per cent. of the specimens. Carr and Hall demonstrated arsenic in the spinal fluid after the administration intravenously in a very small percentage of cases. J. J. Viton of Buenos Aires showed clearly that the permeability of the meninges depends on whether or not they are irritated or inflamed. The injection of homologous serum into the spinal canal will produce leukocytosis; injection of horse serum will produce leukocytosis plus pain and fever. Therefore irritation of the meninges, whether by chemicals or other means, will increase the permeability. This brings us to the question as to whether the intraspinal injection of any drug has any specific effect in the treatment of any of the cerebrospinal syphilitis lesions. I believe that the effect of all these intraspinal injections is to set up a meningitis which, by increasing the blood supply, permits the passage of antibodies and drugs into the spinal fluid enabling them to act more efficaciously on the spirochetes. This condition can more easily be brought about by the technic which I spoke about at first.

DR. TOM A. WILLIAMS, Washington, D. C.: One feature of syphilitic meningitis which is so frequently forgotten is the fact that in the tertiary phase, at least, it is not a serositis; the inflammatory condition is not one of the surface of the membrane, but of the deeply seated blood vessels in the membrane. The lymphocytotic reaction is a mere epiphenomenon, so to speak, quite different from the leukocytotic reaction in epidemic meningitis or in pneumococcic meningitis. Therefore, in order to affect the disease one must attack the perivascular lymphatic spaces in the meninges. What Dr. Barbat has just said is, I think, very true. Three years ago I considered the real elements of advantage in intraspinal medication. I need not repeat what I said in view of what Dr. Barbat said. Sicard, at the very beginning of salvarsan therapy, made a practice of injecting intraspinally weak salts of mercury while at the same time mercurializing or salvarsanizing the patient, with exceedingly gratifying results, which are not inferior to those which have been so often vaunted as peculiarly efficient by persons using salvarsanized serum. I believe that the meningeal reaction produced by the introduction of foreign substance intraspinally is responsible for any advantage there may be, although we do not really know that there is any permanent advantage in intraspinal medication, which must always be combined with systemic medication, whether by salvarsan, preferably, or by mercury as was formerly the case. I do not presume to speak of the problem of paresis, for it would take much longer than five minutes to even lay down the ground for it. I am talking only of the syphilitic meningitis which eventuates in what is called tabes dorsalis.

DR. ALBERT E. STERNE, Indianapolis: In the last seven years I have seen no reason to change the estimation of the results of treatment of any form in cases of the kind under discussion. I desire to place particular emphasis on the fact that no neurologic examination is complete without a thorough bioserologic survey of each individual case, for undoubtedly the biologic findings guide us correctly, to my mind not only diagnostically, but, still more important, prognostically. But so far as the ultimate results of treatment are concerned, I have not been able to convince myself that there is any marked gain. We have, possibly, a better temporary result than was formerly secured. But the crux of this whole question seems to me to lie in two directions: First, we must not fail to recall that we achieved excellent results in the vascular forms of syphilis, not only of the nervous system, but of the body as a whole, but particularly of the nervous system, by the methods employed previous to the use of salvarsan. Some of the forms of vascular syphilis affecting the nervous system recovered then as now. The results of treatment of parenchymatous syphilis are hardly better now than formerly. The happy aspect of the present methods of treatment is this: Personally, I believe that every nervous system is affected early after the primary infection. If the patient has headaches within the first few weeks following primary infection, his spinal fluid should be examined, when in most instances it will be found to bear the characteristics of an invasion of the central nervous system. That is the time, if any time, when we might expect to accomplish something, not only positively curative, but also prophylactically for the prevention of the tertiary degenerative changes in syphilis of the nervous system. That is the time to give intraspinal medication. I do not care what form you use, whether arsenical or mercurial preparations. It has been our habit recently to use the drainage method, but in a slightly different way. When we give an intravenous injection we immediately follow it with a spinal puncture, injecting nothing into the spine, but withdrawing spinal fluid, and creating, so to speak, a wave toward the cerebrospinal axis. Until we know positively the direction and extent of the flow of the cerebrospinal fluid, we cannot definitely say how much may be gained in this way. Owing to the characteristics of the choroid plexus we cannot say, with any degree of assurance, how much or little can be attained, but there is evidence pointing to the fact that we have rapid regeneration of the fluid, and furthermore, that at least part of the spinal fluid is derived from the blood. With the influx into the cerebrospinal axis we have reason to believe that whatever drugs we place in the blood current will soon reach the cerebrospinal axis after lumbar puncture. The time to give intraspinal medication is early, and intravenous medication followed within twenty minutes by spinal puncture would seem to be worthy of trial, in place of direct intraspinal application.

DR. JULIUS GRINKER, Chicago: I would like to ask Dr. Schaller if the presence of the knee jerks in thirteen of the thirty-five cases was really controlled by him, or was it only reported by his interns? It has been my experience that interns will occasionally report the knee jerks as being present in tabetics, when there is only a pseudoreflex present, which is often found in tabetics, and which is merely a voluntary response. If he has controlled the findings then the percentage of present reflexes in tabes is rather high in his

service. My own observation of hundreds of cases of tabetics gives me a smaller percentage of present tendon reflexes. As regards the Achilles jerk, it has been my experience that this reflex is very often lost before the knee reflex. Referring to the negative Wassermann findings in the spinal fluid of eleven cases of tabes, I wish to ask Dr. Schaller whether they were not advanced cases of tabes. I have in mind just one case of tabes in which the patient had positive Wassermann findings with symptomatic improvement after intraspinal injections of neosalvarsan by the Swift-Ellis method. He left the hospital, but returned after a year when repeated Wassermann tests corroborated by an outside laboratory failed to give positive tests. The man at his second entry had an advanced case of tabes; he was extremely ataxic and there was no doubt that he was worse, and yet the Wassermann reaction was negative. With reference to intraspinal injection of either salvarsan or salvarsanized serum in paretics, and the following remission of symptoms, I think the so-called favorable results are deceptive. We must not delude ourselves into believing that we are causing improvement when the improvement is simply a natural phenomenon incident to the disease. I have seen tabes patients with extreme ataxia come to the hospital with crutches and after a few injections of salvarsan go out without assistance, but even here we must use extreme caution in estimating the beneficial effects. Besides, intraspinal injections are not as harmless as one may imagine. In two cases paraplegia followed an injection; in two other cases (not my own) death was the result of intraspinal injection of neosalvarsan. The injection of neosalvarsan, even the small dose of 3 mg., has in many instances caused disastrous effects. Mercurialized serum injections given intraspinally have in my hands caused violent reactions, high temperatures, and extreme pain. In some of the cases there was improvement and in others the reverse. It appears then that at the present time we are not quite prepared to say which is the best mode of treating nervous syphilis. Certain it is that in both tabes and cerebrospinal syphilis the Swift-Ellis treatment, the most harmless of any, deserves still further trial. In paresis we may use this method experimentally, though I have still to see the first patient who improved under treatment by any means whatever.

DR. MATHEW A. REASONER, Washington, D. C.: As to experimental studies of strains of the specific organism of syphilis, a word may not be amiss. As the result of isolating twenty strains from various sources, two from the spinal fluid of patients suffering from nervous syphilis and eighteen from chancres and mucous lesions, we have satisfied ourselves that there are variations in the strains of syphilis we have studied. I am not prepared to say that there are any variations in the morphology of the strains of spirochetes which we have seen. In one strain which I obtained from a man who probably committed suicide three months afterward, I did find choroidal involvement in the rabbit. This same manifestation was observed with our nervous strains. With reference to one statement by Dr. Ball, the serobiologic findings must be considered in conjunction with the others. In the absence of history or manifestations, one positive Wassermann should not be accepted as proof of syphilis. Some one might have mixed the tubes, not to mention other possible sources of error. The test should be repeated. And likewise, in the presence of suspicious manifestations, a negative Wassermann will not be accepted as proof that syphilis does not exist. Other methods may be needed to prove it.

DR. GEORGE H. MOODY, San Antonio, Tex.: Excluding here a consideration of all syphilitic affections except paresis and tabes, and coming directly to the question of their treatment, we recall that two or three years ago some believed they had had, and were reporting, recoveries as the result of arsenical treatment and that a year ago it was practically decided that no patients were getting well. It seems to me that all the papers and discussions at this present meeting lead us definitely to our same former position that nobody is recovering from paresis or from locomotor ataxia. I ask the essayist if they have observed any deleterious results following the administration of arsenic in large doses? I am afraid that in a few of my cases the degeneration in cases of paresis, especially, has been more rapid after heroic arsenical administration, such as is being advocated and administered. I am not certain of this and would like to be convinced a little further if there is any evidence leading to such conclusion. Dr. Riggs has reported definitely that there seems to have been marked improvement in many cases. All of us, perhaps, have had similar observations. I know also that many of these patients improved before we gave arsenic at all, under the mercurial treatment, some of them becoming so much improved that for a little while we almost believed them well. The point is, Are there any cases in which we are making patients worse as a result of the arsenic? We are now agreed, I think, that formerly we did degenerate many of our patients with paresis and locomotor ataxia by the long administration of heroic doses of the iodids and I believe that none of us are administering them this way to patients at this time. Shall we later come to believe that the heroic treatment by arsenic may degenerate some of our patients with paresis and tabes?

DR. HENRY F. STOLL, Hartford, Conn.: I would like to ask some one who has given more intraspinal treatments than I to explain the following: Three patients recently treated were given salvarsan, and within an hour the spinal canal was drained practically dry. The next day the patient was given an intraspinal injection. In this case the Wassermann reaction in the fluid obtained on the first day was ten times as strong as on the second day, i. e., it took ten times as much fluid to get complete inhibition the second day. I do not know whether to interpret this as indicating that the newly formed spinal fluid had not had time in which to develop fully its Wassermann bodies, or whether it means that some of the salvarsan had gotten into the spinal fluid.

DR. W. F. LORENZ, Mendota, Wis.: I doubt the value of removing spinal fluid with the hope of increasing the amount of contained arsenic. This practice would seem to me analogous to catheterizing the bladder and by the creation of a vacuum hope to abstract from the blood toxins that may be present. It seems to me that the difference in the chemical composition of cerebrospinal fluid and blood plasma is so great that one must conclude that the former is not a simple transudate or filtrate but the product of a secretory tissue. Viewing it in that light, a negative pressure on one side would hardly affect the composition of the secretion. Several years ago I reported traces of arsenic in the spinal fluid after the intravenous administration of salvarsan. In regard to negative Wassermann reactions in syphilitics, I recently succeeded in obtaining a positive reaction with the globulin fraction of such a negative serum. The albumin fraction was negative and antagonistic to the binding forces contained in the globulin. I could by varying the amounts of globulin and albumin from the same serum create a negative or positive reaction.

DR. JAMES B. AYER, Boston: I thoroughly believe that we can treat successfully a paretic, only we must get the case early. I believe that the chief value of all this work during the past five or six years is that it is pushing us back more and more toward the original lesion, so that now the feeling is that we should get patients with nerve syphilis in the secondary stage or the very earliest tertiary stage, and begin the treatment then. It sounds radical, but I believe it is rational. On the other hand, if we do get a patient late, perhaps after he has had syphilis for five years, if we can pick him up on some slight symptom and find that he is suffering from cerebrospinal syphilis, I believe that often the patient can be cured. Perhaps you cannot prove that a seeming neurasthenic is going to be a paretic, but if you find the reactions strongly positive in the blood and spinal fluid, if you get the colloidal gold reaction, you can feel quite certain that that man is an early paretic. Such patients are being treated successfully at the present time. If in those cases you do not do something, there is every reason to believe that the patient is going to develop general paresis and die from it. Even if you save only one in one thousand, you do more than you would by letting them alone or by giving them a little something to relieve the immediate symptoms. I thoroughly believe in some form of antisyphilitic serum treatment. I am trying now to get serum into the brain under pressure by the lumbar route. I believe that is a likely form of treatment.

In regard to Dr. Stoll's question of the significance of changes in the spinal fluid on two successive injections, I think the work of my colleague Dr. Solomon on variations in Wassermann and colloidal gold reactions in different loci of the brain and spinal canal bears on that subject.

DR. ROBERT HENRY HASKELL, Ionia, Mich.: I would like to ask if any of the men using the Ogilvie method of treatment have had herpes zoster develop. After using the Swift-Ellis treatment, two years ago, I treated two patients by Ogilvie's method. Following the initial injection the first patient developed herpes zoster in a rather unusual location. He had been in the hospital for some time and there was no other herpes zoster present. Two months later another patient developed herpes zoster following treatment, this time a typical shingles. Was there any etiologic relation between the injection and herpes? Herpes zoster in general paralysis is not unknown. Arsenical zoster is well recognized in dermatology. Salvarsan intravenously occasionally has herpes following it but search of the literature has not revealed any such complication following salvarsan intraspinally. The French literature contains several instances of cocain administered for spinal anesthesia producing a herpes, and following Camp's observations on spinal cords from patients receiving intraspinal salvarsan treatment, the etiologic relation in these cases appears possible and probable.

DR. MALCOLM SUMNER WOODBURY, Clifton Springs, N. Y.: In regard to the question Dr. Moody has raised, I do not know that I have positive evidence of deleterious results following subdural treatment. I have seen some patients with paresis whom I though were helped by the combined subdural and intravenous methods. We have been using mercurialized salvarsanized serum subdurally, supplemented by injections and inunctions of mercury. The patient whose case I will report as bearing on the question is one I saw during the last few months and who appeared to be simply a psychoneurotic. There was a lurking suspicion that we might have here a case of very early paresis, though physical signs were absent. To corroborate the diagnosis the usual serobiologic tests were made. As a result we obtained a positive Wassermann on both the blood serum and spinal fluid. This patient was put on the ordinary line of treatment intravenously, subdurally and by inunction. At two weeks' intervals he received three doses of the mercurialized salvarsanized serum. He appeared to be feeling generally very much better. Two weeks after the third dose, while coming by train to report for the fourth treatment, he was seized with a sudden manic attack. His case has progressed rapidly since that time to a paretic dementia. Whether the treatment stimulated the onset of the active symptoms I do not know. In regard to the early diagnosis of tabes: It seems to me that it is of considerable value for us to pick out the single, individual symptoms which may appear alone and indicate possible tabes. I would refer to one case, not particularly unusual, in which loss of vibration sense in the legs was the only indication which we could make out on examination, and in which examination of the spinal fluid corroborated the diagnosis.

DR. GEORGE A. MOLEEN, Denver: Anisocoria, mentioned by Dr. Schaller, is not infrequent when tuberculosis, especially of the deeper set of lymphatic glands, is present, and when they exert an irritative influence from pressure on the cervical sympathetic I have found that to be the case. Such pressure obviously causes dilatation of the pupil on the ipsolateral side. In addition to the symptom mentioned by Dr. Grinker, the early recognition of the loss of the Achilles reflex together with loss of the vibratory sense as estimated by the tuning-fork are also important and early symptoms. With reference to paresis: The first patient received five injections of salvarsanized serum, and recovered so thoroughly that he was able to leave the institution and carry on his ordinary occupation, that of salesman, and did well for a year, but took no other treatments and ignored advice to do so, after the injections. But he returned to the hospital with a definite paresis, failed rapidly, and died about a month ago. The second patient had three intraspinal injections of salvarsanized serum followed by mercurialized serum. The mental confusion disappeared following injections, and he then came down with an apoplectiform seizure, which has left its permanent effects, with no mental symptoms. Two other patients, brothers, one with distinct confusion, expansiveness and grandiose ideas, were given intraspinal injections of salvarsanized serum and left the hospital, however, continuing a mercurial course. The brother was definitely paretic, with little mental change, but received the same treatment. These two cases have been rendered stationary for about a year under the treatment. The fifth patient went to California, was given intraspinal treatment and then returned, evidently very much confused, and had to be brought home by attendants. He then had about six injections of salvarsanized serum made by the same laboratory in spite of which he progressed rapidly and died about six months after his return. A patient with tabes, treated by intraspinal salvarsanized serum and doing well, after involvement of sphincters and marked diminution of visual acuity, was given three salvarsanized serum injections. The patient went to New York, where five more injections were given, without changing the cytologic picture or limiting the number of lymphocytes but very little. The use of iodin, particularly in the form of Lugol's solution, alternated with mercury in some form (blue mass by the alimentary tract being my favorite), has to my mind been a means of at least ameliorating or checking the progress in these cases. The method of administering Lugol's solution is 5 or more drops in water or milk before meals and gradually increasing to 50 or 60 drops.

As to the Wassermann reaction, if we regard it from its fundamental application it is not specific. I favor the clinical findings against the laboratory if there is conflict. The reaction is not specific, but is rather a reaction against lipoid bodies which have been shown to be present in other conditions.

DR. C. EUGENE RIGGS, St. Paul: Dr. Ball's paper recalls our own experience with the colloidal gold reaction. In over 90 per cent. of our cases of paresis we obtained the typical paretic curve, and in over 50 per cent. of our tabetics we observed a distinctive curve, which we believe to be characteristic of tabes. Also our cerebrospinal syphilitic cases have almost invariably reacted in the syphilitic zone. There are some bizarre reactions, however, that we all have noted in this colloidal gold test. It is not uncommon for us to get the paretic curve in a case apparently of pure tabes. I have in mind now one of our cases of tabes which gave the paretic curve. This patient has been under observation for the past four years. He says he is feeling well. The objective signs still obtain, but the important point is that there has been no development of mental symptoms, no suggestions of paresis. In syphilitic endarteritis one may obtain the paretic curve. A German observer has reported its occurrence in puerperal eclampsia. We have observed it in disseminated sclerosis. We have also obtained this curve in cases of cerebrospinal syphilis, in which the infection had occurred not more than a year previously. Just what the significance of this reaction is, it will require further observation to definitely determine. Eleven years ago, Dr. Dana called attention to the importance of treatment of the early, "the pre-paretic" stage of paresis. If we can get these patients early there is a possibility of accomplishing definite results. After the disease is well established, and nervous tissues have been disintegrated, they cannot be replaced. Our experience, as well as that of Cotton, Ogilvie and many others, has been that very frequently an amelioration of the disease takes place. Sometimes we are able to make the patient what we call socially possible. He is able to live at home under a restricted environment, much to his own and his family's satisfaction. Even if we obtain only an incomplete remission, the patient may be able to straighten out his business affairs, which usually are in a chaotic condition. We believe it has been demonstrated that frequency of remission is an accomplished fact as a result either of the intraspinal or of the intensive form of treatment; this means much and of itself makes the treatment of this class of patients well worth while. Answering Dr. Moody's question, we have never seen a patient unfavorably influenced by the use of intraspinal medication. We have under our care at the present time a paretic who had a remission, and then a relapse. He is now undergoing his second remission. In his case, we have given forty-one intraspinal injections. This

man is certainly very greatly improved over what he was when he first consulted us.

DR. WALTER FRANK SCHALLER, San Francisco: In reply to Dr. Grinker I would say that my comparative figures dealt only with the early tabetic cases. As to the tendon reflexes in the lower extremity I have seen all of the cases reported, and practically without exception have examined all of them for the tendon reflexes. I have been very careful about the technic, preferring the Babinski reflex hammer, as I think that this instrument is better than any of the others in common use, and is especially desirable for eliciting the Achilles tendon reflex. Often, instead of striking the patellar tendon with the reflex hammer, I purposely arrest the hammer just before contact in order to eliminate a possible voluntary knee jerk through suggestion. I have often been impressed in certain cases by a striking difference between the activity of the Achilles tendon reflex and the patellar tendon reflex; when the former is lost, the latter is found not only to be present but quite lively instead of diminished, as one might expect. In regard to Dr. Moleen's remark about the vibration test, I included this test under "Deep Sensibility." We use the Luer fork and very often find the osseous sensibility reduced to 4-5 on the scale.

I was very much interested in what Dr. Ball said about the cell count and I believe that this is one of our most accurate diagnostic tests. I use the Nageotte cell chamber in which one may count cells in a considerable amount of fluid. What Dr. Reasoner and Dr. Pilsbury had to say about the Wassermann reaction appears to me to be deserving of emphasis. I do not accept a Wassermann reaction alone without clinical support as conclusive evidence of syphilis.

DR. CHARLES R. BALL, St. Paul: There is one point in my paper which I would like to emphasize particularly: Case 2 was a patient with very active and severe symptoms but negative reactions, except for a mild globulin and lymphocytosis. The patient in Case 3, on the other hand, had practically no symptoms, either subjective or objective; and yet his spinal fluid reactions were such as are usually found in paresis. A rational explanation of the difference in the reactions in these two cases may be that in the first case we have an active process with all the congestion and pressure symptoms which accompany active processes but localized and limited in extent. In the second case we have a so-called latent process but widespread in character with a general invasion of the nervous system. In the one case the symptoms are from two sources, first, pressure due to hyperemia and swelling; second, the toxin of the spirochete. Here the symptoms, due to pressure, predominate. In the other case, there is no active process, and consequently, no symptoms which accompany such processes. There is simply a mild and chronic toxemia which in time will have its influence on the nervous elements. To my mind these two cases illustrate the difference between true cerebrospinal syphilis and parasyphilis (tabes and paresis). In the former, we have the symptoms of a localized and limited inflammation of a mechanical nature predominating. The symptoms due to a toxemia are secondary, while in the latter the mechanical or pressure symptoms are secondary in character and the toxic predominate. The rational explanation to me of the cortical atrophy in paresis and the posterior column degeneration in tabes is that it is toxic in origin, in all probability the toxin of the spirochetes.

DR. LAWRENCE B. PILSBURY, Lincoln, Neb.: Two years ago I reported twelve or fourteen patients with paresis treated with intravenous injections of salvarsanized serum. Some did badly, two or three at least are still in the hospital apparently no worse than they were two years ago, and have had absolutely no treatment in the last two years of any sort whatever. Just how much the salvarsanized serum had to do with the remissions I do not know. I also have other cases with prolonged remissions without any treatment. I fear that Dr. Lorenz took too seriously the suggestion that substances might pass over from the blood into the spinal fluid. Yet it does appear from Dr. Barbat's results that a small amount of arsenic appears in the spinal fluid in some cases, and some other investigators have obtained the same result. I believe it is very important that these patients, if they are to be treated intensively, should be treated early. And if the general practitioner would only send at once to the neurologist his patients with "heat and sun stroke," "fainting spells," etc., and let the latter make a thorough examination of the blood and spinal fluid, I think there would be fewer patients with paresis getting to the state hospitals later on in a hopeless stage.

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# THE MASTOID OPERATION OF TEN YEARS AGO AND OF TODAY

## BRIEF ESTIMATE OF THE ADVANCE AS MEASURED BY PRACTICAL RESULTS *

PHILIP D. KERRISON, M.D.
NEW YORK

Whatever changes have occurred during the past decade in our method of operating have involved chiefly the treatment of the flaps or soft parts. When men differ as to technic they differ usually in advocating either the old wide-open, gauze-packed wounds, with which we are all familiar, or some form of closed or partially closed wound.

Undoubtedly a growing respect for the soft parts in mastoid surgery has led to some modifications of surgical method. I shall try to show that these changes have not been haphazard, but rather the logical outgrowth of a better appreciation of laws governing wound repair.

*The Bone Operation.*—With minor differences to be noted later, the bone operation of ten years ago was practically that in use today. Posterior drainage from the vault and thorough removal of diseased bone, in whatever direction and to whatever distance this might lead, were then, as now, recognized as the chief surgical aims. Complete obliteration of the mastoid cells and removal of the mastoid tip formed part of the prescribed technic. Removal of the diploic tissue or intercellular bone structures from the zygomatic region was recognized in theory, but in practice not so generally or so thoroughly carried out as in the operation of today. The necessity for removing all overhanging ledges of bone from the margins of the bony wound was insisted on by all competent surgeons. In fact, the dislike for sharp and angular bone margins led often to removal of bone posteriorly considerably beyond the limit of the diseased area, this giving rise to exceedingly extensive bone excavations. In skilful hands this operation, thus completed, left a large cavity walled by smooth and apparently healthy bone.

*Treatment of Soft Parts.*—The wound at completion was flushed with sterile salt solution, dried, and then packed with iodoform or sterile gauze. Beginning at the aditus, gauze strips were pressed firmly into every portion of the bone cavity, and were used in such liberal quantity as to project well above the wound level. The soft parts were thus held widely separated, the posterior flap being pressed well back to the posterior margin of the extensive bone excavation.

*Subsequent Dressings.*—While the outer dressings were commonly changed within twenty-four hours, the wound packing was usually not removed until the fifth day after the operation. When first removed, it was not uncommon to find a perfectly clean wound surface

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of practically bare bone. Not infrequently the appearance of the bone cavity at the first change of dressing was identical with that seen at the completion of the operation, with perhaps here and there a bare trace of beginning granulations. This in the absence of fluid pus was generally regarded as a favorable condition. Should pus or serum have collected at any point between the bone and gauze, it was wiped away. The wound was then repacked in precisely the same fashion as the first dressing, except perhaps that slightly less pressure was employed. These, or similar dressings, changed on alternate days, constituted from this stage the routine of treatment.

*Results.*—Generally speaking, the results obtained were fairly good and it may be stated that in a majority of cases recovery with complete elimination of the suppurative process took place. As offsetting this fact must be mentioned certain recurring mishaps, which seem to have been in some degree attributable to the method in use:

1. In a fairly large percentage of ultimately successful cases, healing was unduly delayed, a lapse of ten or twelve weeks or longer between operation and final healing being by no means uncommon.

2. In a portion of the cases, certainly much larger than is met with today, secondary operation for removal of diseased bone was necessary.

3. In a rather large percentage of cases final healing, usually considerably delayed, occurred with the formation of a permanent and unsightly depression of variable depth occupying the site of the operative bone cavity. This unfortunate deformity is exceedingly rare today.

4. In a considerable, and formerly puzzling, percentage of cases healing in an apparently healthy wound was delayed, sometimes indefinitely or to the point calling for secondary operation, by persistent failure of the aditus to close. This, again, so far as I know, is a rare obstacle to healing in the mastoid operations of today.

The foregoing represent perfectly well-defined postoperative conditions which most experienced surgeons have met with. That they occur less frequently today than formerly suggests a relation of cause and effect. I personally believe that no discussion of an established operation is of the least value which has not some practical aim in view. In this sense, the most useful discussion would take the form of an attempted analysis of the occasional causes of failure. With this purpose, I shall limit my discussion strictly to the following headlines: (1) surgical treatment of the aditus, (2) surgical injuries to bone, (3) influence of pressure on tissue repair, (4) drainage versus tight packing in mastoid surgery, (5) treatment of the soft parts.

*Treatment of the Aditus.*—A stage of the simple mastoid operation in regard to which there is as yet no uniformity of practice is the treatment of the aditus. Formerly the simple establishment of drainage was by many considered all that is required, and there are surgeons who still hold and maintain this view. It seems to me that a rational view on this point might be stated as follows: In very recent cases, in which persistent pain or severity of symptoms compel early operation, little treatment of the aditus may be necessary. Why curet the aditus if lined by an intact, though swollen, mucosa, easily capable of a return to normal?

Usually, however, the tympanic lesion sufficiently antedates mastoid symptoms to make this region a seat of advanced pathologic change. Generally the mucosa is eroded and partly replaced by exuberant granulations. If these granulations are only partially removed from the aditus, what remains may shrink and the parts rapidly regain their normal character. On the other hand, a small amount of granulation tissue left in this situation may mark the site of a focus of disease in the underlying bone. Such a focus of disease, if not surgically removed, may perpetuate the tympanic lesion. There is no question that many trying cases of delayed repair and some failures have been due to this cause.

Granulations attached to the roof and posterior wall of the aditus may be quickly and radically dealt with. Frequently a considerable mass of diploic tissue is attached to the tegmen tympani, thorough removal of which provides a much safer postoperative condition.

Granulations occupying the floor of the aditus are frequently attached also to the short process and body of the incus, and greater care is necessary in order to avoid dislocation and even extraction of the incus. Particularly in operating on young children is this danger a real one. Removal of granulations in this situation often brings the incus into view, and sometimes also the head of the malleus. In cases of long-standing tympanic suppuration, which have not reached the stage characterized as chronic suppuration, exposure of one or both ossicles by careful removal of the outer wall of the vault may be necessary in order to bring the vault into a condition favorable to prompt tympanic resolution. This, however, is exceptional. The contention of some surgeons that the incus should be exposed to view as a routine practice in all mastoid operations does not appeal to me as sound.

*Surgical Injuries to Bone.*—In regard to general technic of the bone operation, I would like to refer to one point only. Aural surgeons have been particularly slow to see the possible danger of excessive planing or scraping of bone surfaces in mastoid surgery. If the inner plates, either by intent or accident, are actually removed over any considerable area, the underlying dura through its abundant blood supply invariably and almost immediately inaugurates the formation of granulations which are the foundation of tissue repair. Who has not exposed an area of dura over tegmen or covering the sinus and within a few days seen this membrane absolutely hidden by a layer of healthy granulations? On the other hand, if the boundary plate in any part of the mastoid cavity is scraped or reduced to an extent injurious to its vitality, the process of repair is either retarded or actually fails. Theoretically, excessive scraping of the bone may act injuriously in two ways, namely, either by insult to the minute blood vessels within the bone, as a result of which repair is retarded until the vascular supply is reestablished; or by reduction to a point actually destructive to bone vitality. Thus we may have only a superficial or surface necrosis, which later is thrown off in the discharge; or the injury may involve the entire thickness of the bone. I have seen cases in which, after a puzzling period of delayed repair, the bony covering of the sigmoid sinus has come away almost as a sequestrum, thus paving the way for normal repair.

When we have defined roughly but clearly the confines of our mastoid cavity, that is, have revealed in contour its various limiting plates, we shall do well to avoid overtreatment of these surfaces. For example,

when we have removed in bulk the cells attached to the bony covering of the sigmoid sinus, we see at first in the inequalities of this surface the outlines of the cells, now opened, lying nearest to this plate. With a curet we may easily display our skill in reducing this surface to one of even and polished smoothness. But in doing so we may seriously impair its health and vitality. This, of course, applies equally to other limiting plates of the mastoid cavity. I am convinced that many an operator has blamed himself in cases requiring secondary operation for failure to remove all diseased bone, when in reality he had erred in the opposite direction, that is, in reducing the bone in certain regions to a degree destructive to its vitality.

There are two causes for excessive curetting of bone surfaces in mastoid surgery, namely, (1) the surgeon's fear of overlooking a series of deeper cells still uncovered; and (2) a more or less general impression among aural surgeons that a smooth and even surface is per se a condition favorable to repair. I know of no evidence in support of this view. If the bone is healthy it may, and often does, withstand this treatment, but repair is retarded. If diseased, it is safer to leave uncovered dura than dura covered by diseased bone or bone which has been scraped to a degree leaving its vitality in doubt.

*Influence of Pressure on Tissue Repair.*—If in mastoid surgery the bone has sometimes received harsh treatment, the blood supply has received even less consideration. It must be remembered that in the old open-wound method of treatment, the sole source of blood supply necessary to tissue repair was the bone itself. In addition to the loss of its supporting periosteum, to the occasional injury to bone vessels through excessive use of curets, the bone cavity at completion was subjected to the pressure of tight gauze packing. That this pressure, maintained at least through the first weeks following the operation, should sometimes influence the wound is not surprising.

*Occasional Results of Pressure by Gauze Packing.*—Tissue repair, proceeding normally in certain areas, is retarded or inhibited at others, at which points the bone, being deprived of its protective and nutrient granulations, suffers a loss of vitality and consequent superficial necrosis. There can be little doubt that a certain percentage of cases coming to secondary operation owe their failure to this cause.

Repair throughout the entire wound surface being retarded, epidermization from the skin margins has extended into the wound cavity, resulting in eventual recovery, but with the formation of an unsightly cavity, or depression, behind the ear.

Repair throughout the bony wound being retarded, the mucosa lining the tympanic vault has spread outward through the aditus to contiguous wound surfaces. As a result of this, closure of this part of the wound has been indefinitely delayed. The nature of this obstacle to closure of a mastoid wound has not been understood, and many patients have suffered prolonged and painful postoperative treatment and some have been subjected to secondary operation who, but for irrational pressure in the region of the aditus and antrum, would have recovered promptly.

A rational deduction from experience which would seem applicable to all fields of surgery might be stated in the form of a law, namely, that *wounds in the process of normal and healthy repair should be subjected to the least possible mechanical disturbance.* Judged by this standard, we bring still another indictment against this method of treatment. Aural surgeons have failed to appreciate that small new processes of tissue repair, delicate new granulation, rudimentary efforts at vascular anastomosis were destroyed or set back at each change of dressing.

The foregoing, in my opinion, represents the defects in theory and practice of the operative methods of ten years ago. Nor is it safe to speak of them as belonging wholly to the past, for, as in every field of endeavor, there are many men of established reputation who, with their immediate followers, are slow to abandon methods learned when they were younger.

*The Blood Clot Operation.*—In passing I want to say a word about the so-called blood clot operation. Its theory was based on the hypothesis that blood possesses inherent bactericidal properties; and that if the wound is closed at the time of operation, the blood collecting therein not only protects from further infection, but actually provides a reticulum, or scaffolding, through which new granulations and blood vessels are projected, the whole being converted into firm and permanent connective tissue.

A weak point in this theory is the fact that in cases of severe tympanic infection, pus from the vault may escape backward through the aditus; and that even if the blood clot occupying the mastoid cavity is not infected thereby, tympanic drainage is cut off, and tympanic suppuration may be perpetuated. That this danger is real is shown by the number of cases in which ultimate breaking down of the wound occurs. This in some cases takes place shortly after the operation; in others only after a much longer period. These considerations have brought the blood-clot theory as applied to mastoid surgery into disrepute.

While the blood-clot theory as such has never appealed to me, there can be no question as to the important influence which the operation, as originally described under that name, has exerted on the surgical methods and growth of the past decade. It at least proved definitely and beyond dispute the possibility of quicker and on the whole better average results than those obtained by the older methods. Apparently a direct result of the Blake-Reik operation was to stimulate general interest among American surgeons in any rational modification of established surgical methods aiming at quicker average results. Unfortunately the time at my disposal will not permit of even a brief review of the various modified operations which have contributed to our technical knowledge. All that I shall attempt is a brief outline of a simple end operation now in use by many practical surgeons.

*Care of the Periosteum.*—The initial incision behind the ear should in its central part be placed at least three eighths of an inch behind the auricular attachment. In elevating the flaps an effort to save the periosteum from injury is distinctly worth while. In children and women this is usually not difficult over the upper two thirds of the mastoid. On the other hand, in strong, muscular men, the frequently rough cortex and extensive muscular attachment may make some injury to periosteum even over the upper half of the mastoid inevitable. In any case, attention to this point is of importance, since an intact and unlacerated periosteum is distinctly favorable to postoperative healing.

*Treatment of Soft Parts; Drainage.*—In healthy wounds, that is, those lined with apparently sound bone and in which no dura has been exposed or even

those in which a moderate exposure of healthy dura has been made, the following technic may be followed: A wick of gauze, so infolded that no ravel threads may be left when it is withdrawn, is placed in the depth of the wound with one end at the aditus, the other emerging at the lower end of the wound. Over this the flaps are approximated and the wound united from its upper extremity to within half an inch of its lower, or tip, end by interrupted silkworm-gut sutures. The sutures are carried preferably through the entire thickness of each flap so as to approximate not only the skin, but also the periosteal, edges. This is not assured by metal clips. A gauze wick fills the auditory canal, and the wound is covered by the usual gauze dressing.

*Postoperative Treatment.* — The dressings are changed daily. On the day following the operation the wick is withdrawn and very gentle pressure with a pad of sterile cotton is applied over the suture line to express serum or pus through the lower (open) end of the wound. The wick removed is then replaced by a much smaller one, which is introduced only from three fourths of an inch to an inch into the wound. Thereafter the wicks are changed at each daily dressing until there is evidence that they are no longer required.

Dependence on the foregoing treatment is based on the hypothesis that the first wick used establishes a drain or pathway of least resistance along which pus escapes as long as drainage is necessary. The small wicks used in subsequent dressings merely maintain the opening at the lower end of the suture line.

There are two fairly reliable signs that this treatment is progressing favorably, namely, (1) progressive and fairly rapid return of drum membrane and tympanic structures to their normal appearance, and (2) progressive diminution of discharge.

I would abandon this treatment and open the wound in any case in which the tympanic structures did not show progressive improvement. On the other hand, I might persist during a considerable period in spite of a fairly profuse, if diminishing, discharge.

*Interpretation of Pus.*—It is almost a habit of mind to think of pus as a danger symptom, since it always indicates a focus of infection, present or preexisting. In reality, pus per se represents danger only if confined or if its secretion or production is more rapid than its elimination. A raw or granulating wound without secretion is, of course, a surgical impossibility. Given, therefore, a partially closed wound from which we have reason to believe that we have eliminated the primary focus of infection, we need not be too ready to take alarm at a discharge which may represent only a stage of the process of repair.

I have known wounds treated by this method to have every appearance of being practically healed within ten days. More wounds are healed within three to five weeks. Some for one reason or another do not progress satisfactorily, but after removal of sutures and separation of the flaps, there follows a more rapid process of healing than by the older method.

Theoretically this plan of treatment seems to meet the following requirements: It provides reasonable and adequate drainage; it utilizes every normal structure, bone and soft parts, in the process of repair; it secures the maximum vascular supply of the parts; it subjects the wound in process of repair to the least possible mechanical disturbance.

*Contraindications.*—That there are contraindications to this method goes without saying. As such I would consider surgical injuries to the sigmoid sinus, physical signs of disease in an exposed sinus wall, and unusual extension of bone necrosis.

Pronounced constitutional symptoms of septic absorption would also call for an open wound, since in such cases the systemic disorder, and not the local lesion, would be the first consideration.

Another condition which, though not a contraindication, should be mentioned in this connection is the presence of large tonsils and adenoids, that is, of the obstructive type. Two cases from my own experience will illustrate what I mean.

In February last I saw, with Dr. Howard Gillespie Myers of New York, a child of 3 suffering from bilateral suppurative otitis media. Both membranes were bulging, though presenting small perforations. The mother had been repeatedly advised to have the tonsils and adenoids removed. Double myringotomy did not bring relief, even in reducing temperature. Ten days after the myringotomy a double mastoidectomy was performed. Following this the temperature returned to normal, but the ears continued to discharge. Two months after the operation, the aural discharge still persisting, the tonsils and adenoids were removed. Within one week after this operation the aural discharge ceased and both mastoid wounds were healed, leaving, however, a perforation in the left drum membrane which may be permanent.

In April last I was called to see R. M., a boy of 4 years, whose condition may be summarized as follows: Large tonsils and adenoids of obstructive type; acutely inflamed right drum membrane with discharge through small perforation; marked tenderness over right mastoid process.

In this case I decided as a first step to remove the tonsils and adenoids, the drum membrane, of course, being incised at the same time. Five days later, edema over the mastoid developed, and a mastoid operation after the method here outlined was performed. In this case the drum membrane healed promptly and the mastoid wound was completely healed with only a fine linear scar, just three weeks after the mastoid operation.

Probably the correct deduction from such cases would be, not that the presence of tonsils and adenoids is a contraindication to any operative method, but rather that tonsils and adenoids of the obstructive type should be removed either as a preliminary step or at the same time as the mastoid operation. The latter may seem harsh treatment, but children stand it, and the results justify the additional strain.

If the question were asked in what essential feature the operative method here outlined differs from that originally described as the blood clot operation, I should say that a blood clot, allowed entirely to fill the mastoid cavity, may act as an obstacle to pus seeking escape; whereas I should regard as unsurgical any operation which does not take account of and provide adequate drainage.

In conclusion, I need not say that I make no pretense to having described a new or original technic. The method I have described is that followed by many surgeons today. What I have attempted is to show the value of the soft parts and particularly the periosteum in mastoid surgery, and to point out wherein the latter methods are in better accord with sound surgical law.

As to comparative results, my own experience may be stated as follows: quicker average healing and lessened suffering to the patient; better cosmetic results, that is, practical elimination of unsightly depressions; smaller percentage of failures.

58 West Fifty-Sixth Street.

## ABSTRACT OF DISCUSSION

DR. R. B. CANFIELD, Ann Arbor, Mich.: All the records and experiments will show the tremendous difficulties we have to overcome in attempting to remove diseased bone in and about the mastoid process. Still, it seems to me that the advance that has been made in the distinctly surgical technic of the operation on the mastoid during the past ten years has been along the line of more and more removing as much of the diseased bone and tissue as we can. As far as the after-treatment is concerned, the end-result of the successful case is more or less always the same, no matter whether we use one treatment or another, and the after-treatment which interferes the least with Nature is the best. Therefore, in deciding on what technic should be used and what advance has been made, we should operate as radically as we can without producing too much deformity, and during the after-treatment leave the case alone, to the benefit of the patient. We must remember that all healing takes place in the soft parts, not in the bone, and the condition of the bone of these mastoids which we have to reopen or which we see three to six weeks after operation is a sad commentary on our after-treatment. If the mastoid process has been excavated, the bone looks best immediately after the operation; it gets into a less and less satisfactory condition the more we treat it. I had an opportunity to compile statistics on the first series of blood clot cases, and although I tried to compile these statistics honestly it seemed to me the paper read much more satisfactorily and gave the idea that blood clot operations are much more satisfactory than an examination of the cases would lead us to believe. I have seen fatal complications arise—cases in which the blood clot was removed better without operation, and it is decidedly a nonsurgical procedure. The best surgical technic is that which removes the greatest percentage of disease, and that after-treatment is best which interferes the least with Nature's healing of the wound.

DR. CULLEN F. WELTY, San Francisco: I do not think that Dr. Kerrison has placed sufficient emphasis on the removal of the individual cells. The removal of every individual cell that can be found by the Jansen searcher has contributed more to the rapid healing than anything else in the whole field of otology. To speak for myself, I rarely operate on a patient the second time. That was not so ten years ago. In the Politzer clinic twelve years ago, more than 5 per cent. required a secondary operation. The more thoroughly the cells are removed, the more sure you are of a complete cure. By removing every individual cell to hard bone, I am again assured of the fact that the healing is retarded and there will be more or less depression; granulation tissue does not spring up as readily. My cases heal in from three weeks to two months. This is not ideal surgery because of the long duration of healing.

I do not believe in the blood clot operation because an occasional case will develop a serious brain lesion that would have gone along without any trouble by the open method. Some four or five years ago, a New York otologist reported seven deaths following the acute mastoid operation by the blood clot procedure. On the other hand, I wish to report 120 cases of my own of acute mastoid operation by the open method without mortality; furthermore, these cases were not selected. However, I do feel that some one will devise a safe procedure that will shorten the after-treatment of acute mastoid operations, and it seems to me that it will be along the line of what is now designated as the closed operation.

DR. JOSEPH C. BECK, Chicago: Dr. Kerrison's review referring to the last ten years' work on the mastoid is very instructive to those who have had anything to do with mastoid surgery. You heal a number of patients quickly, and then there will be a few that will not get along, although the same technic was employed. It must be something else than the technic employed. I am confident that it is a causative factor such as bacteria that originally produces the disease, and the secondary changes of the bones that have to do with the way these conditions heal up. There are various types of bone disease and each individual type heals differently. Whether this or that method is used the result is usually the same. It does, however, matter whether we have tuberculosis, syphilis, or chronic osteitis of purulent character with or without cholesteatoma. In discussing this subject of healing we ought to separate acute from chronic cases. In the last ten years I have employed a definite technic in a simple mastoid. With an uncomplicated case, in which no vital structures are exposed, such as the dura, the sinuses or the labyrinth, the wound is cleaned out completely—I am not particularly enthusiastic about polishing the bone by means of a burr, but after the cavity is clean, the wound is packed loosely with a strip of gauze, a rubber tube is inserted in the opening of the antrum and the drainage gauze and tube allowed to come out through a stab wound. The main incision is primarily closed. Just as soon as the discharge from the external auditory canal stops the drain material is removed and the cavity of the mastoid allowed to close just as any other. I am now speaking of uncomplicated cases, and I mean by that that the discharge and the hearing correspondingly improved. Just as long as there is discharge from the auditory canal I allow drainage from the wound. In the radical mastoid the cavity is never packed primarily, and only when that little space between the facial spur and the upper portion of the tegmen begins to narrow, then we sometimes pack lightly. We do not now make use of any skin grafting.

DR. WENDELL C. PHILLIPS, New York: I am very often asked the question by students and other observers what I consider should be the extent of the mastoid operation, and my invariable reply is that there is no limit to the operation, except the limitations of the disease, and that ought to be the rule that is followed by every operator. Unfortunately, the disease so frequently does extend even beyond the confines of the temporal bone that men of limited experience do not completely excavate the diseased bone and thus bring about conditions that require a second mastoid operation. I have no doubt that Dr. Kerrison meant to imply that the extent of the operation is the limitation of the diseased area. I remove the entire area of diseased bone and all granulations excepting at one point, and that is in the tympanic portion of the mastoid antrum. I do think it is dangerous to do much curetting around here on account of the danger of disturbing the incus. Experience has proved that Nature will attend to the granulations in this area. I wish also to say that one of the points where men fail in the simple mastoid operation to get the diseased bone removed is in the region of the zygoma. In most of my operations I find it necessary to cut away the cortex over the zygoma as far forward as the middle line of the external auditory canal in order to get to the point of limitation of the disease. Regarding the healing process, I quite agree with Dr. Canfield that it is not so much the method we follow in the after-treatment as the method we follow in the operation itself. You can close the wound largely and drain it with a strip of gauze, and then you will have a sinus that will remain for six or eight weeks before it will heal; or you can leave it wide open and pack it.

I must take issue with Dr. Welty if I understood him correctly when he inferred that all postoperative temperatures are due to the fact that all the diseased bone has not been removed. We know that we have postoperative temperature where the bone has been completely removed, and there are various reasons for it. I wish to emphasize one more point in connection with the healing process. We all have delayed cases, in which the granulations do not come toward the center, where secretion persists, where there are flabby granulations, especially when an extensive operation has been done. Under these circumstances we must look elsewhere for the cause and we all know that there are underlying dyscrasias which may account for it. Here it is wise to call in the family physician and get him to examine the urine, the intestinal organs, and find out if there is not something wrong with the general physical condition of the patient, and it is marvelous what results we get and

how rapidly they improve when these conditions are corrected. Sometimes as simple a remedy as bicarbonate of soda will have a marvelous effect on the healing process.

DR. PHILIP D. KERRISON, New York: Dr. Beck's reference to bacteria is important—a point I did not take up. My paper was intended simply to give certain rational grounds for making a better attempt to utilize the soft parts than has been done in the past. My own experience is that this can be done with perfect safety, and with a quicker and a better cosmetic result. The soft parts play a more prominent part in the process of repair than aural surgeons generally have considered to be the fact.

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# RENAL FUNCTION IN NEPHRITIS*

ROBERT L. I. SMITH, S.B., M.D.
Research Fellow, Wesley Memorial Hospital, Chicago
PASADENA, CALIF.

In the last few years a vast amount has been written on the subject of renal function and the various methods of its estimation. Reviews of the literature have appeared frequently.

The present paper is the report of a clinical study of renal function, involving 150 determinations by one of the newer methods — by an index of urea excretion which has been derived from Ambard's laws[1] by F. C. McLean.[2]

Ambard found that:

1. When the concentration of the urea in the urine is constant, the rate of excretion varies directly as the square of the concentration of urea in the blood. This law is expressed:

$$\frac{(\text{Urea in blood})^2}{\text{Rate of excretion}} = \text{Constant}$$

2. When the concentration of urea in the blood is the same, the rate of excretion varies inversely as the square root of the concentration in the urine.

$$\frac{\text{Rate of excretion I}}{\text{Rate of excretion II}} = \frac{\sqrt{\text{Concentration II}}}{\sqrt{\text{Concentration I}}}$$

$$\text{or, Rate I } \sqrt{\text{Concentration I}} = \text{Rate II } \sqrt{\text{Concentration II}}$$

Introducing this factor into the first law we have:

$$\frac{\text{Urea in blood}}{\sqrt{\text{Rate of excretion}}\ \sqrt{\text{Concentration in urine}}} = \text{Constant}$$

3. Other factors remaining constant, the rate of excretion varies directly with the weight of the individual.

$$\frac{\text{Rate}}{\text{Weight}} = \text{Constant.}$$

Combining this with the previous formula, we have:

$$\frac{\text{Concentration of urea in blood}}{\sqrt{\frac{\text{Rate}}{\text{Weight}}}\ \sqrt{\text{Concentration in urine}}} = \text{Constant}$$

This formula expresses all of Ambard's laws in the simplest form. In order to standardize the formula for use in human subjects, Ambard expresses it as follows:

$$\frac{\text{Ur}}{\sqrt{\text{D} \times \frac{70}{\text{Wt}}}\ \sqrt{\frac{\text{C}}{25}}} = \text{Constant (k)}$$

Ur = Grams of urea per liter of blood.
D = Grams of urea excreted per twenty-four hours.
Wt = Weight of individual in kilograms.
C = Grams of urea per liter of urine.

This formula is known as Ambard's coefficient, and the value of K usually found in the normal human subject is 0.08 (McLean). The introduction of a standard weight of 70 kg., a standard concentration of 25 gm. per liter of urine and the expression of excretion as the rate per twenty-four hours are purely arbitrary, and do not affect the general relationship between the variable factors. When these arbitrary factors are kept constant, they, in conjunction with the constant relationship between the four variable factors, tend to keep K constant, and the actual numerical value of K is determined by these arbitrary additions to the formula.

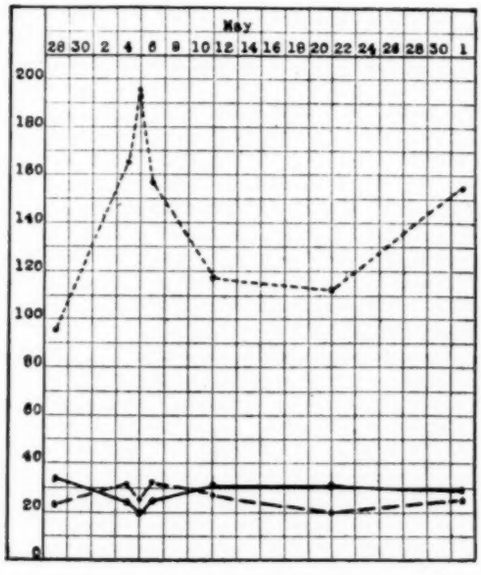


Chart 1.—Normal: solid line, milligrams of urea per hundred c.c. of blood; broken line, grams of urea excreted per twenty-four hours; dotted line, index of urea excretion. This chart shows the variations as found by McLean in a healthy adult.

*Index of Urea Excretion.*—To obviate the necessity of an arbitrary scale for the interpretation of Ambard's coefficient, McLean[2] has adapted a formula from Ambard's laws, based on a scale of 100 so that the rate of urea excretion is given in per cent. of the normal, an index of 100 corresponding to a value of 0.08 for Ambard's coefficient.

The derivation of the index is as follows:

$$\text{Index} = \frac{\text{Rate of excretion}}{\text{Standard normal rate}} \times 100$$

From Ambard's laws:

1. $K = \frac{Ur}{\sqrt{\text{Rate}}}$ $\quad\therefore\ \text{Rate} = \left[\frac{Ur}{0.08}\right]^2$

2. $0.08 = \frac{Ur}{\sqrt{\text{Normal rate}}}$ $\quad\therefore\ \text{Normal rate} = \left[\frac{Ur}{0.08}\right]^2$

3. $\frac{\text{Rate}}{\text{Normal rate}} = \frac{\left[\frac{Ur}{K}\right]^2}{\left[\frac{Ur}{0.08}\right]^2} = \left[\frac{0.08}{K}\right]^2$

4. $\text{Index} = 100 \times \left[\frac{0.08}{K}\right]^2 = \left[\frac{0.08}{K}\right]^2$

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. Ambard, L.: Rapports entre le taux de l'urée dans le sang et l'élimination de l'urée dans l'urine, Compt. rend. Soc. de biol., Nov. 19, 1910, p. 411; Rapports de la quantité et du taux de l'urée dans l'urine, la concentration de l'urée du sang étant constant, ibid., Dec. 3, 1910, p. 506; Physiologie normale et pathologie des reins, Paris, 1914.

2. McLean and Selling: Urea and Total Non-Protein Nitrogen in Normal Human Blood: Relation of Their Concentration to Rate of Elimination, Jour. Biol. Chem., 1914, **19**, 31. McLean, F. C.: The Numerical Laws Governing the Rate of Excretion of Urea and Chlorides in Man, Jour. Exper. Med., 1915, **22**, 212, 366; Clinical Determination of Renal Function by an Index of Urea Excretion, THE JOURNAL A. M. A., Feb. 5, 1916, p. 415.

Substituting for K (Ambard's coefficient) and simplifying,

$$\text{Index} = \frac{\text{Gm. urea per 24 hrs.} \quad \sqrt{\text{Gm. urea per liter urine} \times 8.96}}{\text{Wt. in kg.} \times (\text{Gm. urea per liter of blood})^2}$$

When K = 0.08 the standard normal. Index = 100.

*Methods.*—Specimens: The methods recommended by McLean[2] have been used with slight modification. The observations may be made at any time, since the application of the laws is independent of the nitrogen intake. However, it has been considered preferable as a routine to make the observations in the forenoon, no food or water being taken during the period.

The patient is given 300 c.c. of water to drink. One half hour later the bladder is emptied, by catheter if necessary, and the time noted. Then after one or two hours the bladder is again emptied, the time carefully noted, and the amount of urine measured to within 1 c.c. The shorter period is used when the patient is secreting a fairly large amount of urine. At about the middle of the period, 10 c.c. of blood are drawn from a vein into a dry tube containing about 1 grain of potassium oxalate, with which it is mixed to prevent clotting.

Analysis: The urease method introduced by Marshall[3] has been used. This depends on the breaking down of urea into ammonia and carbon dioxid by the specific enzyme found in soy bean and the subsequent determination of the ammonia. The permanent preparation of urease described by Van Slyke and Cullen[4] has been used throughout. Three analyses were made in each case: blood urea, urine urea and urine ammonia. The urine ammonia is determined in order to correct the urea figure for preformed ammonia, which is also determined in the urea method.

Calculation of the Index: From the results of the determinations the following calculations are made:

1. Grams of urea excreted per 24 hours = D.
2. Grams of urea per liter of urine = C.
3. Grams of urea per liter of blood = Ur.

These values in the body weight in kilos are substituted in the formula for the index as given above, and the value of the index calculated by aid of a slide rule. With the modified slide rule described by McLean it may easily be calculated in fifteen seconds.

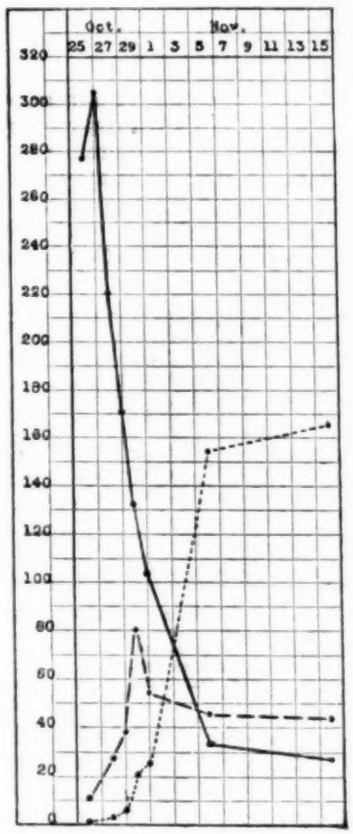


Chart 2.—Uremia: solid line, milligrams of urea per hundred c.c. of blood; broken line, grams of urea excreted per twenty-four hours; dotted line, index of urea excretion.

*Nitrogen Intake.*—It has been clearly demonstrated[2] that while the nitrogen intake has a direct and marked influence on the concentration of blood urea, it has no effect on the index of urea excretion.

The character of the diet in this series has been included in the tables after each observation. The diet noted as "nephritic" is one which is low in protein and sodium chlorid.

3. Marshall, E. K., Jr.: A Rapid Clinical Method for the Estimation of Urea in Urine, Jour. Biol. Chem., 1913, **14**, 283; A New Method for the Determination of Urea in Blood, ibid., 1913, **15**, 487; The Determination of Urea in Urine, ibid., 1913, **15**, 495.

4. Van Slyke, D. D., and Cullen, G. E.: A Permanent Preparation of Urease and Its Use in the Determination of Urea, Jour. Biol. Chem., 1914, **19**, 211; id., THE JOURNAL A. M. A., May 16, 1914, p. 1558.

## UREA EXCRETION

*Urea Excretion in Chronic Nephritis With Hypertension.*—Series 1 contains seventy-seven observations made in cases of chronic nephritis with hypertension. It is to be noted that the blood urea ranges from 0.2 to 3.98 gm. per liter. In 62 per cent. of the patients the blood urea is within normal limits (from 0.2 to 0.5 gm.), yet every observation gave an index of urea excretion below normal. The excretion of phenolsulphonephthalein was low or delayed in nearly every instance in which the test was made.

This series[2] again demonstrates the fact that except in extreme conditions the blood urea figure alone does not show the degree of renal impairment; in fact, it is deceptive, as in over 60 per cent. of the cases in Series 1 the blood urea figure is within normal limits. In spite of this large percentage of patients with normal concentration of blood urea, we know that every one in the series had a definite and permanent impairment of renal function. It is only in the individuals with marked renal impairment, who have a low index of urea excretion and a low phenolsulphonephthalein output, that the blood urea figure rises above the upper limit of normal.

It is significant that 100 per cent. of the patients with chronic nephritis and hypertension had an index of urea excretion below normal.

*Urea Excretion in Chronic Nephritis With Normal Blood Pressure.*—Series 2 contains eighteen observations made on patients with chronic nephritis and normal blood pressure. Of the eight with normal concentration of blood urea, two had a normal index of urea excretion (above 80), four had a slightly lowered (from 50 to 80) and two had an index below 50, which indicates a considerable impairment of renal function. All cases with a blood urea concentration above normal had a low index of urea excretion, that is, one indicating a marked degree of renal impairment. This series is in sharp contrast to the one of chronic nephritis with hypertension in which all cases, regardless of the blood urea figure, have an index of urea excretion below normal. The individuals in this series with normal blood urea tend to have a normal or moderately reduced index of urea excretion, whereas the ones with blood urea concentration above normal all have a low index of urea excretion.

*Urea Excretion in a Series of Miscellaneous Cases.*—Series 3 contains nineteen observations made on eighteen miscellaneous hospital patients. The cases of plumbism, pernicious anemia and diabetes mellitus had an index of urea excretion below 50. One case of acute plumbism shows the marked reduction of blood urea, from 1.3 to 0.74 gm. per liter, which occurred during the course of twenty-three days of treatment. A corresponding rise (from 1 to 12) is noted in the index of urea excretion.

*Urea Excretion in Uremia.*—Chart 2 gives in detail a case of uremia in which the patient recovered.

H. S., man, aged 32, whose case was diagnosed as chronic gonorrhea, multiple strictures, retention of urine, uremia, gluteal abscesses (colon), and colon bacillus septicemia, came under observation Oct. 25, 1915, at which time the pulse was 120, temperature 101 F. and respirations 40 per minute. He was cyanotic and irrational and had retention of urine. The retention was relieved, but the patient continued to grow worse during the day, and 500 c.c. of blood were withdrawn by venesection. The following day (October 26) the patient's condition was apparently the same, although the blood urea concentration was higher. October 27 there was a definite improvement in the general condition, and the blood urea had fallen to 2.21 gm. per liter. From this time on the blood urea continued to fall. The urea excretion was at no time low, being at the rate of 11 gm. per twenty-four hours, when the patient came under observation. It rose to 80 gm., October 29, and then gradually returned to normal. The blood urea concentration diminished rapidly after October 26, and the index of urea excretion rose to normal. There was a much greater improvement in the general condition of the patient during the time the index of urea excretion increased from 0.5 to 26 than in the time it changed from 26 to 166. The amount of urine voided was at all times large, varying from 2,650 to 4,600 c.c. in twenty-four hours.

### UREA INDEX AND PHENOLSULPHONEPHTHALEIN

Although the question as to the agreement of the phenolsulphonephthalein test and the index of urea excretion does not come within the scope of this paper, it is interesting to note that in general the two tests give parallel results. There are striking instances, however, in which the tests do not agree. A case illustrating this is seen in Chart 3. Clinically this is a case of chronic diffuse nephritis with hypertension. The presence of marked impairment of renal function was demonstrated by the presence of a high blood urea concentration and a low index of urea excretion, and the fact that improvement under prolonged hospital treatment was slight and transitory. The phenolsulphonephthalein excretion for two hours was 55 per cent. While 55 per cent. may be considered a little low, it does not indicate the degree of renal impairment that actually existed.

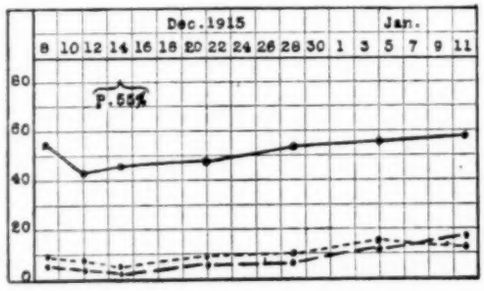


Chart 3.—Chronic diffuse nephritis: solid line, milligrams of urea per hundred c.c. of blood; broken line, grams of urea excreted per twenty-four hours; dotted line, index of urea excretion; P, percentage of phenolsulphonephthalein excreted in two hours.

### CONCLUSIONS

1. The index of urea excretion gives much more information as to the degree of renal impairment and the prognosis, than does the blood urea determination alone.

2. All cases of chronic nephritis with hypertension here studied have impairment of renal function sufficient to alter definitely the relation that normally exists between the urea concentration of the blood and the rate of urea excretion, that is, have a low index of urea excretion.

3. The majority of these cases of chronic nephritis with hypertension have a blood urea concentration within normal limits (from 0.2 to 0.5 gm. per liter).

4. Chronic nephritis with normal blood pressure may or may not have sufficient renal impairment to alter the relation which normally exists between the blood urea concentration and the urea excretion, that is, it may have a normal or a low index of urea excretion.

5. In general the phenolsulphonephthalein test parallels the index of urea excretion; but there are marked exceptions to this rule in which the phenolsulphonephthalein test apparently gives an erroneous idea of the degree of renal impairment.

40 East Colorado Street.

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# OBSERVATIONS ON IMMUNITY OF MONKEYS TO EXPERIMENTAL POLIOMYELITIS *

E. C. ROSENOW, M.D.
ROCHESTER, MINN.
E. B. TOWNE, M.D.
BOSTON
AND
G. W. WHEELER, M.D.
NEW YORK

It is a generally accepted fact that a monkey, after recovery from an attack of experimental poliomyelitis, is immune to subsequent injection with virulent virus. It is a question whether an inoculation which does not cause paralysis confers immunity. Römer believes that immunity follows unsuccessful intracerebral injection in some cases. But there are in the literature many instances in which experimental poliomyelitis has been produced in monkeys which had shown no evidence of infection from a previous inoculation.

We wish to record an experiment which appears to indicate that immunity was conferred on three monkeys by inoculations which were not followed by obvious evidence of infection. One of the apparently immune animals had previously received an intracerebral injection of a culture of pleomorphic streptococci, the second had received emulsion of central nervous system of animals paralyzed by cultures of streptococci, and the third had received virus in the usual way.

*Material used for test inoculation.*—A virus which had been passed successively through four monkeys was employed. A 5 per cent. emulsion in physiologic sodium chlorid solution of the brain and cord of the fourth animal (Monkey 26) was made immediately after necropsy, November 3. This was ground thoroughly with sterile quartz sand, and shaken for twenty minutes. Eight rhesus monkeys were injected in the left frontal lobe with this emulsion. Two of these were controls; five had received previous inoculations with virus, filtrate of virus, or culture; and the eighth had received a mixture of the test virus and blood serum from monkeys suspected of being immune. Seven of the monkeys which were of approximately the same weight were given 1 c.c. of the test virus; and the eighth, which was a large, old animal, was given 3 c.c.

The accompanying table records briefly the results of this experiment. For details of the source of material used in the previous injections, reference should be made to the protocols.

* From the Mayo Foundation.

## PROTOCOLS

EXPERIMENT 1.—*Control.*—Monkey 33, *Macacus rhesus*, 2.6 kg.

Nov. 3, 1916: Etherized; 1 c.c. of Virus 751[5] injected into left frontal lobe.

November 10 (seventh day): Tremor of arms and legs, rapidly followed by flaccid paralysis of left arm and marked weakness of muscles of the right arm, back and legs.

November 11: Prostrate. Killed with ether. Cyst size of pea, filled with clear fluid, was found at point of inoculation. Microscopic section of brain and cord showed marked typical lesions of experimental poliomyelitis.

EXPERIMENT 2.—*Control.*—Monkey 34, *M. rhesus*, 7.3 kg.

November 3: Three c.c. of Virus 751[5] injected into the left frontal lobe. Immediately after injection there was spastic weakness of the right arm.

November 7: Several convulsions. Right arm remained almost useless, and there was slight weakness of right face and leg. Acted sick and ate little.

November 10: Better; took food well and was active; the right arm still weak.

November 13 (tenth day): Irritable. Coarse tremor of left arm.

November 15: General tremor. Legs weak; could scarcely walk. Handling legs appeared to cause pain. Knee kicks exaggerated.

November 16: Legs flaccid; reflexes abolished. Left arm tremulous and weak; back muscles weak. Difficulty in swallowing. Killed with ether. A cyst about the size of an almond filled with clear, deep yellow fluid (old blood) was found at point of injection. Microscopic sections of brain and cord showed typical lesions of experimental poliomyelitis.

EXPERIMENT 3.—*Attempt to destroy activity of virus by mixture with serum of monkeys thought to be immune.*—Monkey 37, *M. rhesus*, 2.8 kg.

November 3: Virus-serum mixture made as follows: Blood was removed from the internal saphenous vein of Monkeys 19 and 21 (which see) previous to their inoculation with the test virus. The serums were mixed so that 1 c.c. contained approximately three parts from Monkey 19 and seven parts from Monkey 21. One c.c. of the serum mixture was added to 1 c.c. of the test virus. The mixture was filtered through paper, kept at a temperature of 35 C. for two and one-half hours, and then in the ice box for fifteen hours.

November 4: Etherized. Two c.c. of virus-serum mixture (containing 1 c.c. of Virus 751[5]) injected into left frontal lobe.

November 19 (fifteenth day): Very excitable. Head inclined to the right; constant coarse tremor of right neck muscles.

November 20: Tremor has extended to muscles of right arm. Knee jerks brisk.

November 21: Flaccid paralysis of legs, back and right arm. Left arm weak and tremulous. Killed with ether. Small cyst containing clear fluid at the point of inoculation. Microscopic sections showed characteristic lesions of experimental poliomyelitis.

EXPERIMENT 4.—*A monkey previously injected intravenously with culture from pus about the teeth of a monkey which did not have pathologic lesions of poliomyelitis, was not immune to test virus.*—Monkey 21, *M. rhesus*, 2.5 kg.

*Previous Inoculation, Sept. 16, 1916.*—Injected intravenously with 4 c.c. of a suspension in physiologic sodium chlorid solution of the centrifugal growth from 60 c.c. of ascites dextrose broth culture of pus around the teeth of Monkey 18, Case 756. This organism appeared in smears from broth as a somewhat elongated diplococcus, occasionally in short chains; and on blood agar plate as small dry green-producing colonies. (Monkey 18 was a domesticated monkey with marked pyorrhea alveolaris; he became spontaneously paralyzed in the animal room. When muscle power began to come back he was killed with ether. Microscopic sections did not show lesions of poliomyelitis.)

September 17: Sick and irritable.

September 21: Appeared well. Etherized. Injected into frontal lobe 1.3 c.c. of physiologic sodium chlorid solution containing the growth from 20 c.c. of ascites dextrose broth culture 756.3 (Monkey 18, teeth). This was a second subculture of the culture injected September 16.

November 2: Had remained well. Blood for serum removed from saphenous vein (compare Monkey 37).

November 3: Etherized. One c.c. of Virus 751[5] injected into left frontal lobe.

November 19 (sixteenth day): Irritable and tremulous, with weakness of legs.

November 20: Flaccid paralysis of both legs. Wrist drop on right.

November 26: Right arm and back muscles gone. Left arm weak and ataxic, but could be used to take food. Good appetite.

December 5: Improving; able to sit up. Arms were stronger but markedly ataxic. Legs could be moved a little.

December 15: Got about quite well. Legs paretic and began to show contractures.

EXPERIMENT 5.—*A monkey, injected intracerebrally with filtrate of brain and cord of a monkey which did not have pathologic lesions of poliomyelitis, was not immune to test virus.*—Monkey 24, *M. rhesus*, 2.3 kg.

*Previous Inoculation, October 5.*—Etherized. One and five-tenths c.c. of Berkefeld N filtrate of Virus 737[4] (glycerinated brain and cord of Monkey 16) injected into left frontal lobe. (Monkey 16 was inoculated with a filtrate of mixed human and monkey virus and developed muscular weakness; but microscopic sections did not give the picture of experimental poliomyelitis.)

November 3: Had remained well. Etherized. One c.c. of Virus 751 injected into left frontal lobe.

November 10 (seventh day): Irritable, with rapid tremor of neck and shoulder muscles. Internal squint, apparently due to weakness of right sixth nerve. General muscular weakness.

November 13: Markedly ataxic. Left arm awkward.

November 17: Less tremor. Both arms weak, especially the right, which showed complete wrist drop. Right leg tired quickly. No knee jerk on right. Strabismus less marked. Photophobia.

November 26: Improving. Shaky and weak; took food well.

December 15: Very active; showed only some residual weakness of right arm; slight internal strabismus and photophobia.

EXPERIMENT 6.—*Example of apparent immunity conferred by inoculation with filtrate and virus seven weeks previously, without evidence of infection.*—Monkey 17, *M. rhesus*, 2.5 kg.

*Previous Inoculation, September 13.*—Etherized. Injected into frontal lobe 1.5 c.c. of Virus 737 (compare Monkey 24) which had been passed through a dense porcelain filter.

September 19: Had remained well. Etherized. Seventy-five hundredths c.c. of fresh human Virus 729 injected into frontal lobe.

November 3: Had remained well. Etherized. One c.c. of Virus 751 injected into left frontal lobe.

RESULTS OF TEST INJECTIONS OF A VIRULENT VIRUS

| | 1<br>Monkey 33<br>M. rhesus<br>2.6 kg.<br>(Control) | 2<br>Monkey 34<br>M. rhesus<br>7.3 kg.<br>(Control) | 3<br>Monkey 37<br>M. rhesus<br>2.8 kg. | 4<br>Monkey 21<br>M. rhesus<br>2.3 kg. | 5<br>Monkey 24<br>M. rhesus<br>2.3 kg. | 6<br>Monkey 17<br>M. rhesus<br>2.5 kg. | 7<br>Monkey 14<br>M. rhesus<br>2.1 kg. | 8<br>Monkey 19<br>M. rhesus<br>2.8 kg. |
|---|---|---|---|---|---|---|---|---|
| Previous injection | | | | Sept. 16 and 21, growth from 60 c.c. and 20 c.c. Broth Cult. 756 (Monkey 18, teeth) intravenously (not polio.) | Oct. 5, 1.5 c.c. Berk. N filt. Virus 737[4] (Monkey 16); intracerebrally (not poliomyelitis) | Sept. 13, 1.5 c.c. porcelain filt. Virus 737 intrac.; Sept. 19, 0.75 c.c. Virus 729 intracer. | Sept. 11 and 20, intrac. injec. filt. and Virus 714[3] (Monkeys 10 and 12, paralyzed with cultures) | Sept. 16, 1 c.c. Culture 707.2 intracerebrally |
| Result of previous injection | | | | Sept. 17, sick; well thereafter | Remained well | Remained well | Sept. 18, Rt. arm awkward; well thereafter | Sept. 16-18, sick; well thereafter |
| Virus 751[5] (Monkey 26) | Nov. 3, 1 c.c. intracerebrally | Nov. 3, 3 c.c. intracerebrally | Nov. 4, 1 c.c. Virus + 1 c.c. serum, Monkeys 19 and 21 (incubated 2½ hrs.) intracerebrally | Nov. 3, 1 c.c. intracerebrally | Nov. 3, 1 c.c. intracerebrally | Nov. 3, 1 c.c. intracerebrally | Nov. 3, 1 c.c. intracerebrally | Nov. 3, 1 c.c. intracerebrally |
| Result | Paralysis 7th day; killed with ether 8th day; typical lesions | Tremor 10th day; paralysis 13th day; killed with ether 14th day; typical lesions | Excitement and tremor 15th day; paralysis 17th day; killed with ether 17th day; typical lesions | Tremor 16th day; paraly. 17th day; prostrate 23d day; improved 32d day; weak legs with contractures 45th day. | Ataxia, squint and paresis 7th day; paralysis 14th day; improved 23rd day; weak arm and squint 45th day | No symptoms; well on 45th day | No symptoms; well on 45th day | No symptoms; well on 45th day |

December 15: Had continued to be perfectly normal.

EXPERIMENT 7.—*Example of apparent immunity conferred by inoculation with virus from two monkeys which were paralyzed with virus and culture from a paralyzed rabbit.* Monkey 14, *M. rhesus*, 2.1 kg.

*Previous Inoculation, September 11.*—Etherized. One and five-tenths c.c. of a Berkefeld filtrate of fresh emulsion of brain of Monkey 19 (see below) injected into frontal lobe.

September 18: Right arm used rather awkwardly. No other symptoms.

September 20: Well; no weakness of right arm detected. Etherized. One c.c. of emulsion of glycerinated brain and cord of Monkeys 10 and 12 injected into frontal lobe. (Monkey 10 received an intracerebral injection of an emulsion of brain of Rabbit 1017; Monkey 12[1] was twice injected intravenously with a pure culture of streptococci grown from the brain of Rabbit 1017. This was the third of a series of rabbits in which a strain of streptococcus recovered from a human poliomyelitis brain caused flaccid paralysis. Both monkeys came down with flaccid paralysis, and microscopic sections showed marked cord lesions, without, however, the perivascular infiltration which is considered typical of experimental poliomyelitis in monkeys.)

November 3: Had remained well. Etherized. One c.c. of Virus 751[3] injected into left frontal lobe.

November 17: No symptoms.

December 15: Had remained well.

EXPERIMENT 8.—*Example of apparent immunity conferred by intracerebral injection of a culture of streptococci isolated from a human cord.*—Monkey 19, *M. rhesus*, 2.8 kg.

*Previous Inoculation, September 16.*—Etherized. One and five-tenths c.c. of suspension of Culture 707.2 injected into frontal lobe. (This strain came from a single colony of pleomorphic streptococci 2 cm. from the top of a four-day ascites-dextrose agar shake culture of an emulsion of fresh human poliomyelitis spinal cord. This colony was subcultured in tubes and bottles of ascites fluid plus sterile rabbit kidney, and ascites broth plus sterile kidney. September 16, these subcultures had been growing twenty-three days, and smears showed an extremely pleomorphic organism; lanceolate diplococci, round cocci in short chains, flat-sided meningococcus-like diplococci, and very small globoid chains. Chains could be found in which each of these types were present. On aerobic blood agar plate these cultures grew pure as fine dry green-producing colonies.)

September 17: Sick since injection; quiet, would not eat. No muscular weakness.

September 18: Better; began to eat. Arms and legs strong, reflexes normal.

October 2: Had remained well.

November 2: Had remained well. Blood removed from saphenous vein.

November 3: Etherized. One c.c. of Virus 751[3] injected into left frontal lobe.

December 15: Daily observations had shown no abnormality.

## COMMENT

Three unused and five used monkeys were injected with a monkey virus. The test virus had been carried through monkeys to a stage of virulence at which it should, according to the experience of investigators, cause experimental poliomyelitis in all nonimmune monkeys injected. The two control monkeys became severely paralyzed and were killed. The third (Monkey 37) also became a good control, as the experiment proved that the animal from which 70 per cent. of the serum was obtained (Monkey 21) was not an immune monkey.

Monkeys 21 and 24, which came down with typical poliomyelitis symptoms and recovered, are of considerable interest in that they show that inoculation with cultures or filtrate of virus from nonpoliomyelitis sources, as determined by pathologic findings, does not confer immunity to a virulent virus.

There remain the three monkeys which showed no symptoms following the test injection and were normal forty-five days after. The question whether or not these animals showed any symptoms of infection after their previous inoculation is difficult to determine. Monkey 14 had a definitely clumsy right arm for about twenty-four hours at a period seven days after his first injection; but no weakness could be made out. His awkwardness rapidly disappeared, and he showed none of the usual symptoms of irritability and tremor. No symptoms were observed in the other two monkeys.

The important point of the experiment is that two of the three monkeys which were not affected by the test virus had previously been injected with material obtained from cultures of human poliomyelitis nervous tissue. Monkey 14 received filtrate and emulsion of brain and cord of monkeys which had been paralyzed with rabbit virus and culture; the successive passages of this strain through three rabbits in the form of large lanceolate diplococci grown aerobically would seem to exclude any possibility that the small anaerobic organism described by Flexner and Noguchi could have been carried over. Similarly, the culture used in Monkey 19 came from a single colony near the top of an agar shake culture. Flexner and Noguchi[2] state that they have never obtained from poliomyelitic material in solid medium an initial growth of the small organism, aside from contaminations.

We wish to record these observations as suggestive of the importance of immunologic studies with the pleomorphic streptococcus which has been isolated from the central nervous system in cases of human and experimental poliomyelitis.

1. Rosenow, E. C.; Towne, E. B., and Wheeler, G. W.: The Etiology of Epidemic Poliomyelitis, Preliminary Note, THE JOURNAL A. M. A., Oct. 21, 1916, p. 1202.

2. Flexner, S., and Noguchi, H.: Experiments on the Cultivation of the Micro-Organism Causing Epidemic Poliomyelitis, Jour. Exper. Med., 1913, **18**, 465.

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# END-RESULTS OF THE TREATMENT OF TUBERCULOSIS OF THE SPINE, HIP, KNEE AND ANKLE JOINTS

FROM THE RECORDS OF THE NEW YORK ORTHOPEDIC DISPENSARY AND HOSPITAL *

ROBERT E. HUMPHRIES, M.D.
Surgeon-in-Chief, New Jersey Orthopedic Hospital; Assistant Surgeon, New York Orthopedic Hospital

AND

H. A. DURHAM, M.D.
Assistant Surgeon, New York Orthopedic Hospital; Surgeon, New York Orthopedic Dispensary

NEW YORK

During the past twenty years treatment of joint tuberculosis at the New York Orthopedic Dispensary and Hospital has been for the most part conservative, the main object being to procure as near as possible immobilization of the diseased joints.

Weight bearing has been considered advantageous when it did not interfere with fixation, as in the knee and ankle joints, but of considerable disadvantage when it did interfere with fixation, as in the hip and spine.

Ankle joint disease has been treated by fixation with a stiff ankle brace having a molded foot piece which fits inside the shoe, plaster having been used as temporary dressing only. The use of crutches has been necessary at times when the disease has been too acute to permit of weight-bearing.

In the treatment of knee joint disease a stiff leg support has been used; this is fastened to the shoe and extends to the groin, with a leather backing extending from the thigh band to the calf band, thus forming a trough in which the leg is firmly held by a muslin bandage, extending from the middle of the calf to the top of the brace. The bandage is changed daily, thus assuring constant fixation, and ready accessibility to inspection by the surgeon. The only exception to this

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

rule has been in those cases with marked flexion deformity. This has been reduced with a plaster cast supplemented by traction, the cast being changed weekly.

TABLE 1.—ANKLE JOINT DISEASE

| | |
|---|---|
| Total number of cases of ankle joint disease treated | 50 |
| Number of boys treated | 28 |
| Number of girls treated | 22 |
| Number of cases with right ankle involved | 31 |
| Number of cases with left ankle involved | 19 |
| Average age on admission, years | 5½ |
| Duration of disease on admission, months | 7½ |
| Average duration of treatment, years | 4⅛ |
| Number patients cured | 23 |
| Number under treatment at present time | 0 |
| Number died | 6 |
| Number could not be located | 21 |
| Of the patients cured, number with free motion with no deformity of foot | 15 |
| Number with limited motion with no deformity of foot | 6 |
| Number with limited motion and deformity of foot | 2 |

The management of hip joint disease brings other factors into consideration. Owing to the conformation of this joint, it is difficult under any circumstances to eliminate all motion. This is at once rendered impossible when weight-bearing is allowed. The Taylor hip splint has been used almost exclusively for this condition, since it eliminates weight-bearing by its crutch action. While the traction on the thigh supplied by this apparatus does not separate the joint surfaces, as was formerly supposed, it does render valuable aid to joint immobilization.

Up to the year of 1910 the Taylor spinal assistant was used entirely in the treatment of Pott's disease. It is easy to apply, can be accurately adjusted, is not liable to cause excoriation, is sanitary and renders the spine constantly accessible for inspection by the surgeon. In spite of the careful treatment given each patient, it has been impossible to prevent increase of deformity in a large percentage of cases. This is especially true when the disease involves the dorsal region, because owing to the movement of the thorax during respiration, no form of apparatus yet devised is capable of accurately fixing this area. It is true that in some cases of cervical and lumbar disease deformity can be prevented by mechanical apparatus.

TABLE 2.—KNEE JOINT DISEASE

| | |
|---|---|
| Total number of cases of knee joint disease treated | 150 |
| Number of boys treated | 87 |
| Number of girls treated | 69 |
| Number of cases with right knee involved | 83 |
| Number of cases with left knee involved | 73 |
| Average age on admission, years | 6½ |
| Average duration of disease on admission, years | 2 |
| Average duration of treatment, years | 7 |
| Number patients cured | 106 |
| Number under treatment at present time | 7 |
| Number died | 7 |
| Number could not be located | 43 |
| Of the patients cured, number with lengthening of limb | 10 |
| Number with no change in length of limb | 73 |
| Number with less than 1 inch shortening | 7 |
| Number with less than 2 inches shortening | 14 |
| Number with more than 2 inches shortening | 2 |
| Number with flexion deformity without ankylosis | 5 |
| Number with flexion deformity with ankylosis | 13 |
| Number with ankylosis without deformity | 13 |
| Number with fifteen to ninety degrees flexion from full extension | 36 |
| Number with more than 90 degrees flexion from full extension | 39 |

Because of the inability accurately to fix the spine, and thus prevent deformity, it occurred to Dr. Hibbs that it might be possible by operative procedure to produce a fusion over the posterior aspect of the diseased and adjacent vertebrae, thus eliminating motion, limiting deformity, and giving nature a better opportunity of combating the disease.

With this end in view, the first osteoplastic operation on the spine was performed Jan. 9, 1911. The results obtained in those patients operated on in the early part of 1911 were so gratifying that for the past four years operation has been advised as a routine in all cases except those in which complication rendered the prognosis hopeless. This treatment has been supplemented by a spinal assistant worn from six to eighteen months after operation. Operative treatment is particularly advantageous in early cases, as it offers a means of limiting deformity and shortening duration of treatment.

The accompanying tables report only those cases of joint tuberculosis in which the patients were under 16 years of age at the time treatment was begun, who came to the dispensary between the years of 1895 and 1910, and whose treatment was continued two or more years.

TABLE 3.—HIP JOINT DISEASE

| | |
|---|---|
| Total number of cases of hip joint disease treated | 461 |
| Number of boys treated | 236 |
| Number of girls treated | 225 |
| Number of cases with right hip involved | 242 |
| Number of cases with left hip involved | 219 |
| Average duration of disease on admission, years | 2 |
| Average age on admission, years | 7 |
| Average duration of treatment, years | 7½ |
| Number patients cured | 171 |
| Number under treatment at present time | 44 |
| Number died | 60 |
| Number could not be located | 215 |
| Of cases cured, number with less than 1 inch shortening | 40 |
| Number with less than 2 inches shortening | 59 |
| Number with less than 3 inches shortening | 60 |
| Number with more than 3 inches shortening | 21 |
| Number with adduction and flexion deformity combined | 36 |
| Number with flexion without adduction deformity | 17 |
| Number with bony ankylosis | 13 |
| Number with fibrous ankylosis | 49 |
| Number with no destruction of femoral head (Roentgen examination) | 32 |
| Number with partial destruction of femoral head (Roentgen examination) | 86 |
| Number with complete destruction of femoral head (Roentgen examination) | 88 |
| Number with partial acetabular destruction but no evidence of disease of femoral head (Roentgen examination) | 6 |
| Number with dislocation (Roentgen examination) | 3 |
| Number with thigh flexion from 15 to 90 degrees | 73 |
| Number with more than 90 degrees thigh flexion | 45 |
| Number with perfect function without deformity | 35 |
| Number with relaxation of knee joint | 20 |

## CONCLUSIONS

From the foregoing statistics it would seem that the following conclusions are justified:

1. The regions most frequently involved in joint tuberculosis in order of frequency are the spine, hip joint, knee joint and ankle joint.

2. The disease is more frequent in boys than in girls.

TABLE 4.—POTT'S DISEASE

| | |
|---|---|
| Total number of cases of Pott's disease treated | 517 |
| Number of boys treated | 284 |
| Number of girls treated | 233 |
| Location of disease: Cervical | 47 |
| Upper dorsal | 71 |
| Middorsal | 118 |
| Lower dorsal | 105 |
| Dorsal-lumbar | 100 |
| Lumbar | 76 |
| Average age on admission, years | 5½ |
| Average duration of disease on admission, years | 1½ |
| Average duration of treatment, years | 7½ |
| Number patients cured | 135 |
| Number under treatment at present time | 7 |
| Number died | 112 |
| Number could not be located | 227 |
| Of the patients cured, number with marked increase in deformity | 50 |
| Number with slight increase in deformity | 42 |
| Number with no increase in deformity | 28 |
| Number with no deformity | 5 |
| Number of patients operated on | 48 |
| Number of patients not operated on | 77 |
| Number of cases in which deformity increased, following operation | 10 |
| Number of cases in which deformity did not increase after operation | 38 |

3. The disease affects the joints of the right side more frequently than those of the left.

4. The average duration of treatment of all joint disease patients was six and one-half years.

5. Joint tuberculosis is usually well advanced before diagnosis is made, the average duration of the disease on admission being one and one-half years.

6. The average age of patients when admitted for treatment was six and one-fourth years.

7. Ankle joint disease can be cured in most instances with little or no deformity.

8. Of the knee joint cases seen, 15 per cent. had more than 1 inch shortening; 25 per cent. had ankylosis; 75 per cent. had more than 15 degrees motion from full extension; 38 per cent. had more than 90 degrees motion from full extension.

9. Of the hip joint cases cured, 34 per cent. had less than 1 inch shortening; 24 per cent. had varying degrees of flexion and adduction deformity; 28 per cent. had bony or fibrous ankylosis; 55 per cent. had none or only partial destruction of the heads of the femora; 55 per cent. had more than 15 degrees flexion from full extension; 9 per cent. had some degrees of relaxation of knee joint.

10. In Pott's disease the dorsal region is much more frequently involved than all the other regions combined; 73 per cent. of all cases of Pott's disease had perceptible increase of deformity during the course of treatment.

Of the patients operated on, 20 per cent. had some increase in deformity following the operation, but in no case was there actual increase in deformity of the area operated on.

104 East Fortieth Street—2 West Sixty-Fifth Street.

## ABSTRACT OF DISCUSSION

DR. JOHN RIDLON, Chicago: The results of this work are remarkably good. Of the twenty-three cases of ankle joint disease cured, fifteen had free motion, with no deformity of the foot. It has been a belief of mine for many years that ankle-joint disease is the most favorable kind of chronic tuberculous joint disease we have to handle. I have seen a tuberculous ankle joint go through several years of disease, have abscesses and sinuses develop, and go on to spontaneous opening and healing, without having been treated or having been seen by a doctor during the course of the disease, recovery taking place without deformity and with almost a normal range of motion. This may be the explanation why such remarkably large and good results followed in the cases of the disease reported in the paper. In the knee-joint disease, there were eleven in which there was actual lengthening of the limb. I have seen this in only one or two, or two or three cases, perhaps; and it is my conviction that these are the cases in which the knee-joint disease is a syphilitic inherited disease and in which the disease is located, not within the joint itself, but at the epiphyseal line of the femur, as was the case in such instances of lengthening as I have seen. There were five that had flexion deformity without ankylosis, and thirteen that had flexion deformity with ankylosis at the knee joint. I believe that if we can control our cases, we ought to be able to cure all without flexion deformity. Of the hip-joint patients, 171 were cured.

Only thirty-six had adduction and flexion deformity and seventeen had flexion deformity without adduction deformity, making a total of fifty-three treated by the long traction hip-splint of Taylor. I have used that splint all my life, and have never been able to get anything like such good results from it. I am amazed that such a large proportion can be cured without adduction deformity. It shows the careful attention that the patients have had, and is a wonderful result. Eighty-eight had complete destruction of the femoral head, and only a partial acetabular destruction. My experience, when I have had the advantage of Roentgen-ray examination, is that I have found a larger number showing destruction of the acetabulum than of the head; and unless these have all been carefully checked up and the sockets compared with the sockets on the other side by Roentgen-ray examination, I should doubt that result. Of the 171 patients, 153 were cured without motion. These are beautiful results, and show how absurd is Lorenz' position that patients should be treated to secure ankylosis as soon as possible, and that it is impossible to cure these patients with motion. We know it is possible to get a large number of patients cured with motion, and here are the results. Twenty were found, after cure, with relaxation of the knee joint. That has been one of the unpleasant results that I have had from the use of the long traction splint, and I have ceased to use it as soon as I find the knee joint begins to be lax. I have used it in the past longer and in more cases than necessary, and I believe that we should have obtained as good motion and less deformity, with no relaxation of the knee joint, if we had discontinued its use and put the patients in some form of immobilizing apparatus, allowing them to walk on these limbs.

DR. REGINALD H. SAYRE, New York: The institution is to be congratulated on the results shown in the paper, but the statistics do not give very much information. Here are sixty-three patients getting well of hip disease with flexion and adduction deformity, but there is nothing to show how much of that was due to faulty care in the institution, and how much to inattention on the part of the parents and their lack of taking care of the children as they should. There is nothing in the statistics to show how much deformity the patients had when they came under observation, as compared with what they had when they went out from under observation. This is true of the statistics of most of our institutions. I feel somewhat as Dr. Ridlon does regarding the difficulty of preventing flexion deformity in the hip by means of the hip splint with simply a pelvic belt. For years I have been using a thorax belt, as well; and since I have adopted this, the patients have not had flexion deformity, if there was regularity in the attendance of the patient. I think that Dr. Phelps was right in his contention that we should make the splints as nearly fool-proof as possible in dispensaries, and also in private practice. In regard to the relaxed knees, I believe that they are caused by our own inattention, and that we often pull on the shin instead of on the thigh. Frequently, when the patients' legs itch, they pull the plaster off the thigh; and we pull on the shin, instead of the thigh, without noticing it. Berkley Hill of London about forty years ago drew my father's attention to the possibility of doing that, and getting relaxed knees in the treatment of hip diseases by the Sayre splint. My father said, "You get relaxation of the knee joint from it; because you pull on the shin, instead of on the thigh." That is the trouble in many of the relaxed knee joint cases. This report distinctly shows that ankylosis is not the thing to be desired in joint disease. I believe that the nearer you get to a normal joint, the more desirable the result will be. That is not the German idea, and I know that some of my American friends think that you should strive for ankylosis of these joints. I know, however, that I can frequently obtain movable joints; and as long as I can do so, I will follow the efforts to get them.

DR. CHARLES M. JACOBS, Chicago: I should like to have Dr. Humphries tell us whether he uses only long traction hip splints in all his hip cases; and if not, what are his results with the use of the plaster casts.

DR. ROBERT E. HUMPHRIES, New York: Dr. Ridlon says that he has found a greater percentage of cases with acetabular destruction than this report indicates. The cases considered in this report as having had acetabular destruction showed no evidence of disease in the head of the femur on Roentgen-ray examination. Many cases showed destruction of both the head of the femur and the acetabulum and are therefore only considered under the heading of destruction of the head of the femur. The good results obtained were due mainly to two factors: first, a large outpatient nursing staff which keeps in constant touch with the patient, instructing the parents in the adjustment of braces and in the hygienic care of their children and also seeing that the patients are brought regularly to the dispensary; second, a country hospital where many of the cases reported were treated. Patients with joint tuberculosis cannot be cared for properly at home without frequent visits by nurses and they can be taken care of very much better in a country hospital devoted solely to the treatment of joint tuberculosis. The point advanced by Dr. Sayre, that statistics are always inaccurate because one cannot tell what percentage of poor results are due to inefficiency

on the part of the surgeon and what is due to the neglect by the parents, is a good one; however, I do not see how this can be ruled out. Plaster of paris is never used except as a temporary dressing, consequently it is impossible at this time to compare this form of treatment with that of plaster.

## A PRIMIPARA AT 46

SEELEY ANDREWS, M.D., MINDEN, NEB.

The patient, a blonde, small boned, normal weight 115 pounds, was born in Denmark, June 17, 1870. She was a domestic until ten years ago, then clerked in a store, and was married two years ago. Her last menstruation occurred, Feb. 1, 1916. Pregnancy was uninterrupted except for threatened miscarriages in June and September, 1916, when she had several pains, and a good deal of hemorrhage. Since the fourth month she had considerable albuminuria, and the blood pressure had constantly been above 150. She had had dropsical conditions of the lower limbs and violent headaches at times.

Two days before confinement I examined the patient, and found her in normal condition except for a funnel-shaped pelvis, with a diameter of 8 cm. The coccyx was movable and could be pushed well back. Pains began at 12 p. m., November 16; labor terminated at 9 p. m., November 17. Preparations were made for cesarean section because of conclusions from the prior examination. Labor was normal, the head engaged, and then delivery was accomplished after the medium forceps operation. There was a slight laceration which was repaired at the time.

I have been unable to find in the literature a record of a patient anywhere near this age at first confinement.

# *Therapeutics*

## DISTURBANCES OF THE KIDNEYS

*(Continued from page 199)*

### RENAL CALCULI

Renal calculi vary from small particles of precipitated salts—enough to make a granular sediment in the urine, passed without pain or knowledge, to concretions large enough to cause colics, or to remain in the pelvis of the kidney. Although it was thought that uric acid stones were very frequently found in the urine and that calcium oxalate stones seldom appeared, it has been shown recently that the latter occur most frequently, and form the largest element in the composition of renal calculi. It has been shown also that these calcium oxalate calculi are not necessarily hard.[59] As uric acid calculi may be very hard, and calcium oxalate calculi may be soft, Rowlands believes that the hardness of calculi depends on the rapidity of their formation — the slower the formation the harder the calculus.

Most renal calculi contain uric acid or urates in small amounts. However, these ingredients can be determined only by chemical analysis, as one cannot decide the character of a calculus from its color, shape and hardness. Renal calculi may occur with or without gout, that is, gout and the formation of calculi are not closely related, according to Kahn. The tophi in gout may be composed of sodium and ammonium biurate or possibly of calcium oxalate. It is by no means to be taken for granted that they always contain uric acid or urates.

Phosphatic calculi frequently have a uric acid nucleus. Theoretically calcium oxalate and uric acid calculi should not be redissolved in the kidney or bladder after having once been formed; nevertheless, urate and phosphate deposits evidently do dissolve or break down repeatedly. However, it has recently been shown by Haskins[60] that all neutral, alkaline or slightly acid urines will absorb uric acid; that the less acid the urine, the more uric acid will generally be dissolved, and that a dilute urine will usually dissolve more uric acid than a concentrated urine. Therefore, a freshly formed uric acid concretion may dissolve in the kidney or bladder, provided the urine is not too acid or too concentrated.

The phosphate calculi are usually mixtures of ammoniomagnesium phosphate and calcium phosphate. Calcium carbonate is rarely found; xanthin and cystin deposits occasionally occur. Some irritation in the pelvis of the kidney is generally the primary cause of this deposit, a mucous shred, or a clump of bacteria with its surrounding leukocytes forming a nucleus.

### SYMPTOMS

While patients can pass a large amount of gravel with little pain, the presence of these crystals in the urine is frequently accompanied by backache or pains shooting down the ureters, irritability of the bladder, and occasionally urethral stinging from the urine. If a calculus is present in the pelvis of the kidney, repeated examinations of the urine and of the centrifuged portions will usually prove that there are more red blood corpuscles than normal. The urine may show macroscopic blood and shreds of mucus streaked with blood. Of course, blood in the urine does not prove that a calculus is the cause; but with other symptoms of calculi, with pain referred to one side, with ureteral catheterization showing blood coming from one kidney, and with the positive evidence of a roentgenogram, the diagnosis can be made. It should, of course, be recognized that kidney pain and even kidney colic may not be caused by a calculus impinged in the orifice of the ureter. The cause of this usually intermittent pain may be discovered by deduction or by the examinations just suggested.

Sometimes this kidney pain is not referred to the back, but to the center of the abdomen, upward toward the liver, to the right side, or to the appendix region. If the calculus has entered the ureter, the pain is referred down its length toward the bladder; soon pain is felt in the testicles in the male, and in the vulva in the female, and later, in the male, there is pain referred to the end of the penis. It should be noted that renal calculi occur more frequently in men than in women.

Besides blood, albumin may occur in the urine, and hyaline casts may be found, owing to reflex irritation caused by the calculus. If the pelvic irritation continues, inflammation may result with increased mucous secretion, followed by pus.

Generally careful palpation of the suspected kidney will show that it is tender to pressure; it may be enlarged.

A true renal colic comes on suddenly, often without previous symptoms, and is as likely to occur when the patient is in bed as when he is undergoing physical exertion. In about half of the cases, pain starts in the lumbar region of the affected side, comes gradually around toward the abdomen, and shoots down

59. Rowlands: Biochem. Jour., 1908, **3**, 346. Mackarill, Moore and Thomas: Biochem. Jour., 1910, **5**, 161. Kahn, Max: Study of the Chemistry of Renal Calculi, Arch. Int. Med., January, 1913, p. 92.

60. Haskins: Jour. Biol. Chem., August, 1916.

toward the bladder, as described. The pain is generally accompanied by nausea and vomiting, a feeling of faintness, and a weak pulse. Sometimes the skin is covered with cold, clammy perspiration, and the patient is on the verge of collapse. At times the patient lies down with his pain; sometimes he is bent over with pain, and sometimes he writhes in agony. There is often a desire to urinate frequently, sometimes without the ability to do so. The temperature seldom rises. Blood may pass into the bladder, the urine becoming discolored even before the calculus has passed. When the calculus reaches the bladder, the cessation of pain is almost instantaneous. During its passage down the ureter the patient is generally aware of its location, the pain leaving the back and being referred more and more toward the bladder and down into the genitals.

As soon as it has been determined that the calculus has reached the bladder, the patient is told to hold the urine for a while and then pass it as rapidly as possible from the urethra, so as to flood out the calculus from the bladder. Until the calculus is found, the urine should be passed either into a jar or through a strainer, and neither physician nor patient should be content until the calculus is found, or until it has been decided that the calculus has disintegrated somewhere during its passage. Such a disintegration often occurs if the calculus has been rapidly formed and is soft, especially if it is of the urate variety.

Recurrent attacks of renal pain, and often apparently ureteral pain, may occur without the passage of a calculus. Such attacks are often accompanied by fever, and may be preceded by a chill. If the pain is not very severe, it may be termed a backache, and the patient be told that he has malarial intermittent fever. It is inexcusable, however, for such a diagnosis to be made, as the malarial element can be excluded by examination of the blood; and a careful examination of the urine, localization of the symptoms and roentgenoscopy should make the diagnosis conclusive. In these instances not only does a large amount of mucus appear in the urine, but soon small amounts of pus are apt to appear, with signs and symptoms later of actual inflammation of the pelvis of the kidney.

### TREATMENT

The immediate treatment is the same as that of colic of the kidney. The pain must be stopped and the tissues relaxed if possible. No manipulations of the kidney or urethra should be attempted, as this will do more harm than good. The patient should receive a hypodermic injection of ¼ grain of morphin with $\frac{1}{100}$ grain of atropin, and, if possible, should sit in a bathtub filled with warm water up to his waist. The relaxation caused by the water may stop spasm and aid the passage of the calculus. Of course if the pain is intense and he is faint and vomits, or if the pain persists for an extended period of time, such bath treatment is impossible and inadvisable. Under such conditions, hot, moist fomentations over the affected side will afford some relief.

If the morphin has no effect within from a half to three quarters of an hour, another injection must be given, the character of the pain and the size of the person determining the dosage. Another ¼ grain or ⅛ grain of morphin should be given, not combined with atropin, as it is unwise to repeat the dose of atropin. Atropin acts slowly and persistently, and a large dose may cause stimulation of the heart and central nervous system instead of sedation of the peripheral nerves. If the patient has been seen previously and is known to be very tolerant to morphin, the first dose may be much larger than the ¼ grain advised; large doses of morphin should not be given, however, since as soon as the calculus is either forced back into the pelvis of the kidney, or passes into the bladder, the intense pain immediately ceases, and the whole activity of the morphin is in evidence. In fact, whenever large doses of morphin have been administered for acute pain and the pain has ceased, the patient should not be allowed to sleep for some hours, the nurse or attendant keeping him awake until part of the morphin has been eliminated. The patient should be encouraged to pass the urine as soon as the bladder is considered full, and large drafts of water should be taken to wash out the stomach. Black coffee may also be given to stimulate the nervous system and to counteract the effect of the morphin on the respiratory center, and later, the patient should be given a cathartic to relieve constipation caused by the morphin. Food should not be given for some hours.

In order to avoid an overdose of morphin, the patient may be given a few whiffs of chloroform to bring about the relaxation desired and to allow the morphin to show its effect. Sometimes the action of chloroform administered after a morphin injection is successful, the pain not recurring with such intensity, and the patient becoming quiet, although he knows that the stone has not passed. Much chloroform should not be given, nor should it be given too frequently, as cardiac debility may be caused by the repeated use of even small inhalations. No other drugs are of any assistance whatever in the treatment of renal colic.

*After-Treatment.*—The calculus should be examined in order to discover its component parts, as its constituency may indicate the character of the food to be avoided. It should be remembered that at the time of the deposit of one calculus there may have been others, and prophylactic measures should be taken, as other colics may occur. The patient should drink large amounts of distilled water, or, if the urine shows high acidity, particularly if the calculus was found to be of the uric acid variety, he should be given alkalies and large amounts of sodium bicarbonate or good sized doses of potassium citrate. The frequency and size of the dose depends on how much it takes to cause the urine to become alkaline. On the other hand, if the calculus was found to be phosphatic and the urine only faintly acid, or alkaline, alkalies should not be given, but rather something to make the urine acid — as hexamethylenamin or dilute hydrochloric acid — to be taken after meals.

The diet depends on the character of the concretion and the condition of the urine. Meat should for a time be avoided, provided the urine is highly acid and the calculus was composed of uric acid, calcium oxalate or urates. If the urine is alkaline and the calculus was composed of alkaline salts, meat should be allowed. Ordinarily, a milk and cereal diet is proper, the diet depending more or less on the amount of intestinal indigestion caused. Such indigestion is to be guarded against both by the administration of laxatives and by arrangement of the diet, as the formation and absorption of by-products or toxins, and the presence of indicanuria have a tendency to cause more urinary deposits. Needless to say, alcohol, excessive tea and coffee drinking, rich foods and fancy dishes should be prohibited. Pure water is of great impor-

tance, and the patient should drink it liberally unless some affection of the heart or kidneys compels him to drink it in moderate quantities. There is no artificial water, no mineral water, no lithia water which will dissolve as much salts as will distilled or ordinary pure water. Consequently, nothing is attained by buying expensive bottled waters.

In the presence of the conditions that cause urinary concretions, it is self-evident that a sojourn at some mineral spring, "cure" or sanatorium at which the diet, the exercise, and the hours of sleep and rest are all under supervision, will benefit such patients; but let it be emphasized that it has not been proved that lithia waters will dissolve renal or gallbladder calculi, while lithia in almost any form, in any tangible amount, tends to cause gastro-intestinal indigestion.

The subject of urinary solvents has recently been reviewed by Haskins,[61] whose findings may be thus summarized: Piperazin may cause the urine to dissolve more uric acid, which may be further increased by giving with it sodium citrate or bicarbonate. The best results occur when diuresis is not caused. Lysidin increases the uric acid solution, but is not a very good agent, as large doses are required. Lithium carbonate is of value only in large and dangerous doses, and is no better than sodium citrate or bicarbonate; in fact, sodium citrate, sodium bicarbonate or potassium citrate are very satisfactory uric acid solvents when given in sufficient doses to alkalize the urine. In other words, there is no necessity for administering any but these last three well known, simple drugs, especially when combined with the use of distilled or pure water.

Unless it is desired to increase the uric acid excretion it is not advisable to administer atophan or novatophan in cases with calculi. If it seems advisable to give these drugs, they should be combined with sodium bicarbonate and given in small doses, such as 0.3 gm. (5 grains) two or three times a day. Large doses of atophan may cause gravel, and sometimes colic.

Normal urine should be acid, and to keep it alkaline for any length of time is generally bad treatment. Therefore alkalies should not be administered over an extended period of time as such procedure may result in cystitis, pyelitis or possibly the precipitation of phosphate calculi. Furthermore, any bacteria that may be lodged in the pelvis of the kidney or in the bladder, caused by the irritation of the previous calculus, will grow more rapidly in this alkaline medium.

If before or after the passage of calculus, or while a calculus is suspected or known to be located in the pelvis of the kidney, the urine is alkaline or ammoniacal without treatment, hexamethylenamin and dilute hydrochloric acid should be given as suggested above. If there is no marked bleeding from the kidneys or in the urine, the dose of hexamethylenamin should be 0.3 gm. (5 grains), dissolved in half a glass of water, four or five times a day, or 0.6 gm. (10 grains) in a glass of water, three times a day, for one or two weeks; the treatment should then be suspended, and perhaps later begun again. Very large doses of hexamethylenamin are not necessary. If the urine nevertheless remains alkaline, the hexamethylenamin is of no value, and one may conclude that the inflammation is serious, probably requiring surgical interference. With many bacteria in the urine the hexamethylenamin treatment is the correct one. Alkalies should not be given.

61. Haskins, H. D.: The Uric Acid Solvent Power of Urine After Administration of Piperazin, Lysidin, Lithium Carbonate and Other Alkalies, Arch. Int. Med., March, 1916, p. 405.

In some instances the pain is referred to the region of the gallbladder; in others, particularly in colic of the right side, to the appendix. Diagnosis in these cases is difficult, especially when not accompanied by hematuria.

Therefore, before operative interference is decided on for possible appendicitis or gallbladder trouble, roentgenograms should be made. It should be noted that not every calculus (even in the bladder) will cast a shadow; also that calcareous deposits in a tuberculous kidney may cast a shadow not unlike calculi. When there is doubt, and when the pain is a chronic, one-sided pain, particularly of the right side, cystoscopy and ureteral catheterization should be performed, and in some instances a dilating wax-tipped bougie may be passed into the pelvis of the suspected kidney. Pyelography may be utilized for diagnosis, as with a stone in the kidney it has been asserted that the pelvis is generally more or less enlarged. In acute cases without pus in the urine, and with a suspected appendix inflammation, a blood count showing a leukocytosis should indicate appendicitis. When gallbladder inflammation is suspected, there should be increased temperature, probably leukocytosis, staining of tissues with bile — which may also be found in the urine, and possibly distinct evidences of jaundice. In chronic cases in which there may be a stone in the kidney, and operative interference necessary, not only the foregoing examinations, but also functional tests of the kidneys, and blood tests for nitrogen retention should be made. If there has been a calculus in the kidney for some time, the function of that kidney is usually impaired, and there may be pus. If the stone is not passed within a month after the renal colic, radiograms of the kidney should be made. If no stone is thus located, it may be hoped it has dissolved or become disintegrated; if it is located, it should be surgically removed before the kidney is injured. The kind of operation to be performed on a kidney found to harbor a calculus depends on the condition of that kidney, and on the functional ability of the other kidney. This will be referred to later under another heading. Blood in the urine, more than a few corpuscles which may always be present, points distinctly to a pathologic condition in the urinary tract, and is rarely coincident with appendicitis or gallbladder trouble.

(*To be continued*)

**Second Illness Census in Health District No. 1.**—In the November *Bulletin* of the New York City Department of Health appear the results of two illness censuses taken in the experimental health district. The first was taken in August, 1915, and the second in February, 1916. Comparatively few deaths were caused by respiratory diseases, but the mortality from these diseases is excessively high in the negro and Italian districts. The incidence of illness is higher at the extremes of life, and the percentage of increase in illness during the winter months is greater in infancy and old age. Up to the fifteenth year males appear to be more susceptible to disease than females; after the fifteenth year the reverse obtains. The lowest illness rate was observed among clerks, and is due to their favorable age as well as to their sheltered occupation. The family income is an important factor in morbidity and mortality. The incidence of illness from all causes was found to decrease as the density per room decreased, excepting when a great proportion of elderly persons entered into the calculations. The conclusion is reached that these illness censuses have demonstrated the value of such intensive study. It is therefore proposed to take a census of illness in those districts of the city in which the mortality is unusually high.

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SATURDAY, JANUARY 27, 1917

## INFECTIOUS JAUNDICE — WEIL'S DISEASE — SPIROCHAETOSIS ICTEROHAEMORRHAGICA

In 1886, Weil[1] described the disease which subsequently more or less consistently has been called Weil's disease. In case this term has come to include diseases of different etiology, which seems altogether likely, it naturally will require a more exact knowledge of the etiology than we now possess before the diseases in question can be fully and satisfactorily understood. The recent discovery both in Japan and Germany of a spirochete as the cause of acute febrile jaundice, believed to correspond fully to what is meant by the term "Weil's disease," marks a long advance in the direction just indicated. In Germany Huebener and Reiter,[2] and a few days later Uhlenhuth and Fromme,[3] apparently wholly independently, not long since announced that in guinea-pigs the injection of the blood of patients in the early stages of Weil's disease causes symptoms and changes similar to those of the human disease — fever, jaundice, hemorrhages, albuminuria, degeneration of liver and kidneys, etc. The blood and urine of such guinea-pigs are pathogenic and transmit the disease to other guinea-pigs on injection or oral and rectal introduction, but not through the healthy skin. The investigators mentioned also found organisms in the blood and organs, especially in the blood and then in the liver, of injected guinea-pigs and of patients with Weil's disease, which Uhlenhuth and Fromme[4] described as delicate, motile spirochetes. The first description of Huebener and Reiter was less definite, but subsequently[5] they also regarded the organism as a spirochete and named it *Spirochaeta nodosa*. It was found that, as the symptoms subside, specific spirocheticidal substances appear in the blood, and the serum becomes both protective and curative; hence the outlook for the development of a successful serum therapy would seem encouraging. Following Ungermann, Reiter[6] announced that the spirochete can be grown on artificial mediums, the best medium being rabbit serum diluted with salt solution and covered with oil to exclude air. His efforts to demonstrate by experiment that certain biting insects may transmit the spirochete do not seem to have yielded any decisive results.

Turning now to the Japanese work, we find that Inada, Ido and their associates are studying a disease which occurs in various parts of Japan, especially in certain coal mines, and which corresponds in description to the description of Weil's disease, the death rate being about 32 per cent. We find also that successful inoculation of guinea-pigs and demonstration of spirochetes were accomplished a year or more before the Germans announced their discoveries. The most important results of the Japanese work are available in an English summary[7] which shows that guinea-pigs were inoculated in 1913 and spirochetes found in 1914. Here, too, are reported successful methods for growing the microbes on artificial mediums. In human beings the spirochetes are most numerous in the blood on about the fourth and fifth days, and are easily demonstrable in the liver and elsewhere when death occurs early; but inoculation experiments and efforts to demonstrate the organisms in the tissues fail after the twelfth day or so. In the urine, however, virulent spirochetes continue to appear much longer, sometimes for from forty to fifty days or more; they are also found sometimes in the sputum and feces. Martin and Pettit[8] also have found the urine in Weil's disease infectious. The disappearance of spirochetes from the blood and the organs (except possibly the kidneys) is associated with the development of specific antispirochetal substances, the action of which is shown by appropriate tests (Pfeiffer's phenomenon). The Japanese investigators[9] have immunized horses with cultures of the spirochetes and obtained immune serum with definite action, which serum is being tested in the human disease.

Whether or not the spirochete described by the German workers is exactly the same as the one described by Inada and his co-workers is hard to say and need not be discussed any further now. It is noteworthy that the main results of this highly interesting work in the two far separated countries on what for short we call Weil's disease correspond closely — demonstration of spirochetes in the blood and tissues of patients, demonstration of the production in guinea-pigs of a condition like the human disease with the presence of spirochetes by the injection of infectious blood, and demonstration of an antispirochetal immunity. The results of the Japanese investigations, which are the earlier and the more complete, differ from the German in that they show rats and mice to be susceptible, and this is a point which should be carefully

1. Weil: Ueber eine eigenthumliche, mit Milztumor, Ikterus und Nephritis einhergehende Infektionskrankheit, Deutsch. Arch. f. klin. Med., 1886, **39**, 209.
2. Huebener and Reiter: Deutsch. med. Wchnschr., 1915, **41**, 1275.
3. Uhlenhuth and Fromme: Med. Klin., 1915, **11**, 1202.
4. Uhlenhuth and Fromme: Med. Klin., 1915, **11**, 1264, 1296, 1375.
5. Huebener and Reiter: Deutsch. med. Wchnschr., 1916, **42**, 1.
6. Reiter: Deutsch. med. Wchnschr., 1916, **42**, 1283.
7. Inada, Ido, Hoki, Kaneko and Ito: The Etiology, Mode of Infection, and Specific Therapy of Weil's Disease (Spirochaetosis Icterohaemorrhagica), Jour. Exper. Med., 1916, **23**, 377.
8. Martin and Pettit: Bull. de l'Acad. de méd. de Paris, Oct. 10, 1916.
9. Jour. Exper. Med., 1916, **24**, 485.

studied in the future, especially because, in a recent article by Ido[10] and others, evidence is brought forward that both house and what they call brown or ditch rats may harbor virulent spirochetes in their kidneys and thus play an important part in spreading the disease. The Japanese also assert that in guinea-pigs the spirochetes may enter through the unbroken skin. Finally, it may be pointed out that in the event the spirochetes described in Japan and in Germany as the cause of icteric infections — spirochaetosis icterohaemorrhagica (Inada) — prove to be the same, the name proposed by the Japanese, *Spirochaeta icterohaemorrhagiae*, by virtue of priority, will replace *Spirochaeta nodosa*, suggested by Huebener and Reiter. The further developments from the study of icteric infections by the methods just discussed may be awaited with much interest.

## FOOD FAT AND MILK FAT

So long as Virchow looked on both the fat globules and other constituents of milk as the direct products of a fatty degeneration or disintegration of the cells of the mammary gland, there was little consideration of the possible interrelations of the food fats and those which appeared in the mammary secretion. Later, when pathologists like Arnold of Heidelberg concluded that even the freest secretion of milk may take place without any degeneration of the cells of the mammary glands, no emphasis was given to the direct interdependence of food and milk fats. It was believed at that time that the components of the fat are brought to the lactating cells from without in a water-soluble form, and that the fat is newly constructed from such material within the cellular protoplasm by functioning vital processes.

There can be no doubt today that various ingested substances — for example, drugs — may pass as such into the milk. Intoxication of infants through poisonous substances taken by the mother and transferred into her milk are not unknown. For the most part, however, these are accidental constituents of milk, and represent distinctly foreign substances. If they are fairly soluble they are likely to travel to all of the tissues and secretions before they can be completely eliminated by the parent organism. The appearance of such traces of foreign derivatives in milk, therefore, is presumably largely fortuitous rather than due to a special selective secretory activity on the part of the glands producing it.

The problem of the appearance of the fats of the food in the fat of the milk offers somewhat different aspects from the foregoing, in view of the fact that fats in general are not essentially "foreign" to milk. Here again, however, prevailing views of metabolism have influenced the decision as to the transport of food fat. So long as it was believed that fats are absorbed as such and carried in the circulation in the form of emulsified particles to various regions of the body, there was no obvious limitation to a rather direct transfer of fat from food to milk. It was in this belief that investigations with a large number of fats not characteristic of the lactating animal were made. The feeding of such extraneous fats as cottonseed oil, sunflower oil, peanut oil, cocoa butter, linseed oil, sesame oil, almond oil, palm oil, etc., seemed to remove all doubt of their transfer in part into the milk.

Latterly several circumstances have served to present the question of the origin of milk fats in a still different light. The demonstration of the actual digestion of ingested fats prior to their distribution and utilization in the body is now generally accepted. Fats are not absorbed unchanged, though they may be reconverted to their original form after passage out of the alimentary canal. The conviction that lipoids such as lecithin and cholesterol may play a significant part in the metabolism of the fats has gained ground, especially through the studies of Bloor.[1] But in addition to this, account must now be taken of the growing belief that we must distinguish between cell fat and stored fat, such as is found in the fat depots of the body. Leathes and his collaborators, in particular, are largely responsible for the doctrine that the fatty acids derived either from the foods or from the stores in the body are prepared, so to speak, for metabolism by a preliminary chemical change in the liver. Here mobilized fat, like fat absorbed from the intestine is, in the first instance, said to be altered so that it is composed to a much larger extent of unsaturated fatty acids. This "desaturation" of fatty acids is believed to produce new fats which offer less resistance to the combustion processes which furnish energy to the organism. The unsaturated unions are the weak links in the carbon chains of the fatty acids, and form the presumable points of attack in the catabolic disintegration of the fats. Thus fat from the connective tissues where it is stored differs from that which has passed through the liver as a preparation for subsequent oxidation.

In the light of the foregoing, it is not unreasonable to inquire whether milk fat, too, represents a specially prepared sort of fat, uniquely valuable as a ready source of energy, or whether it corresponds more closely with the less differentiated fats which find their way temporarily into the connective tissue fat depots of the organism. If milk fat is formed entirely de novo in the mammary gland, it may be expected to be specific in character and constant in composition independently of the food factor; but even if the milk fat represents in whole or in part the dietary fats, it is quite conceivable that the latter may have been "worked over" in the liver or some other glandular structure so as to become specifically like the fat char-

10. Jour. Exper. Med., 1916, **24**, 471.

1. The Lipoids ("Fats") of Human Blood, editorial, THE JOURNAL A. M. A., Sept. 23, 1916, p. 956; Blood Lipoids and Diabetes, Nov. 25, 1916, p. 1602.

acteristic of milk. The final alternative is that the milk fat is essentially a mixture of imported contributions varying largely with the fat of the diet. Breed characteristics, such as the indisputable differences between Holstein and Jersey or Guernsey milk, might, in this event, merely affect the quantity rather than the quality of the fat secreted in milk.

In attempting a reinvestigation of the old question as to the extent to which fat present in the food of the cow imparts certain of its own properties to the milk fat, the officers of the Georgia Experiment Station have reverted to the feeding of cottonseed oil, a fat mixture of distinctive character.[2] They have found that when cows were fed cottonseed oil, the properties of the butter fat differed from those of a butter fat produced when the animals were not receiving the cottonseed oil. The change was greater with the feeding of a large amount of oil. It did not occur with maximum intensity immediately, but showed a gradual increase until the seventh day of continued feeding. Certain constituents of cottonseed oil could be detected in the butter fat within from twelve to thirty-six hours after feeding the oil.

Such were the experimental facts. It must not be assumed, however, that a simple transfer of cottonseed oil to the milk fat had occurred. In general, the change in properties on feeding oil were the same as those observed on an advance of several weeks in the period of lactation. Cottonseed oil, when fed in small quantities, was not transferred in any considerable amounts directly to the milk fat. Some of the substances of which the oil is composed apparently were transferred in a greater amount than others. The constituents of the oil did not reach the milk fat in the same combinations or proportions in which they exist in cottonseed oil. The Georgia investigators accordingly suggest that cottonseed oil and other oils are not transferred, in any considerable quantity, unchanged in composition to the milk fat, but either undergo a kind of "selective absorption" by the animal body, or certain of its constituents are considerably changed before reaching the cells of the milk gland.

The evaluation of the Georgia data will doubtless vary with the minds of different readers. There are not a few who might look on them as evidence of a marked qualitative variability of milk, and consequently look on the character of the fat supply to a lactating female as a matter of supreme importance. Von Fürth[3] has presented this point of view by the remark that often the trouble met in changing wet-nurses may in the last count be connected with the biochemistry of fat. He adds that there is justice in the demand that in the first place the milk of nursing women be kept constant by selection of an appropriate fat mixture; and again that by proper feeding of cows a milk be produced with fat similar to the fat of human milk. We are more inclined, however, to see in the Georgia and other experiments an indication of a vigorous tendency on the part of the body as a whole and the mammary gland in particular to prepare a fat product of fairly uniform character. The small variations incident to enormous alterations in the diet tend, in our belief, to substantiate the probability of the essential though not absolute independence of the quality of milk fat from its food precursors. Sometimes, in large excursions from the usual dietary conditions, the transforming biochemical mechanisms, if they may so be designated, may be almost overwhelmed by the task of modifying food fat sources for mammary output. Small quantities of unusual adventitious products may escape; but this does not appear to represent the usual or seriously significant occurrence. Furthermore, it remains to be demonstrated that milk fat containing incidental traces of less common fat residues is in any way detrimental to health. The natural yellow color of butter fat is varied by dietary factors without at present exciting any suspicions of undesirability.

2. Smith, F. H.; Wells, C. A., and Ewing, P. V.: The Changes in Composition of Butter Fat Produced by Feeding Cottonseed Oil, Bull. 122, Georgia Expt. Sta., June, 1916.

3. Von Fürth, O.: Chemistry of Metabolism, translated by A. J. Smith, Philadelphia, 1916, p. 425.

## TEMPERANCE DRINKS AND THE SODA FOUNTAIN

Millions of dollars, representing the return to the government as revenue from the manufacture and sale of alcoholic beverages, attest the enormous consumption of the latter in this country each year. Whether it is attributable to the wave of prohibition which is slowly sweeping over this country, or to the development of new tastes side by side with the long standing demand for spirituous liquors, or to both factors combined, in any event a rapidly developing trade in so-called temperance beverages has manifested itself for some time. In part this has represented an augmented consumption of drinks like ginger ale and root beer, which have long enjoyed a limited popularity in the United States. In larger measure the new trade involves a growing sale of products scarcely used at all in a commercial way a decade or two ago. Thus, referring to the grape juice industry, a recent writer[1] reports some astonishing figures for the stimulation of trade in this beverage. The production of American unfermented grape juice in the year 1914 amounted to nearly five million gallons in the Chautauqua belt alone.

The consumption of what is commonly termed soda water in this country must be much larger. The United States has been called the greatest soda fountain country in the world. In fact, soda water of the sort dispensed flavored with fruit syrups as a fountain beverage is distinctly an American drink which has found popularity in few other countries, with the possible exception of Australia, where the soda water

1. Mendel, L. B.: Changes in the Food Supply and Their Relation to Nutrition, Yale University Press, New Haven, 1916, p. 41.

business is said to be conducted much as it is here. The habit of drinking soda water at a "stand" of some sort in summer has gradually stimulated a demand for "hot drinks" at the same establishments in winter, so that hot coffee, chocolate, malted milk, bouillon, etc., have likewise come into vogue for sale to those who drink cold nonalcoholic beverages in summer.

It is not easy to estimate the magnitude of the current enterprise in this field. The retail value of the sodas, "sundaes" and other fountain beverages or refreshments for 1916 has been placed at $500,000,000. For ice cream it was estimated by a statistician of the National Association of Ice Cream Manufacturers that 200,000,000 gallons would be consumed in this country in 1916. At 40 cents a gallon, which is about the minimum price at which ice cream is sold, the American public would be expending no less than $80,000,000 for this delicacy.

During all the years in which the liquor saloon has been in existence, scarcely any attempt has been made to regulate its practices in the interest of public or personal hygiene. On the other hand, public sanitary regulation of the operation of the soda fountain business has already been introduced within the few years in which the new trade has begun to thrive so prominently. In some places the regulations have become more stringent than the restrictions on restaurants, or saloons in which eating and drinking utensils are used. For example, in one region the health authorities have decreed that all glasses, cups, spoons, etc., used at fountains must be sterilized after each service. Another state has ordered the use of individual paper cups unless all glasses are sterilized. Similar legislation having in view the prevention of the spread of communicable disease through the use of unclean glasses has been adopted by local health boards or sanitary authorities in various places. Furthermore, provision has been made here and there for medical examination of employees so that the beverages shall not be dispensed by persons liable to spread disease in their occupation. How difficult it would be either to secure or to put into practice comparable sanitary regulations in the liquor saloon, where under the existing conditions of the traffic the hygienic hazards must be decidedly more prominent.

## DUST AND ITS DANGERS

In the clinic of occupational diseases it is well recognized that dust of various sorts is a menace to the health of a large number of wage earners. For 1915 it has been estimated by Frederick L. Hoffman that at least 10 per cent. of workers labored under conditions more or less detrimental to health and life on account of atmospheric pollution commonly classed as dust.[1] This impurity may be of the most diverse sorts. There are insoluble inorganic dusts, including metals in a state of fine division, silica, sand, coal, marble and similar powders. Potter's asthma, grinder's phthisis, and the siderosis among metal polishers and others engaged in metal working are familiar illustrations of the harm done by this class of dusts, which usually produce irritation through being inhaled. Others represent soluble inorganic impurities which are more readily absorbed after being swallowed, and are dangerous because of their inherently poisonous qualities. A third class, the organic dusts, comprises such widely varying materials as "sawdust, fur, skins, feathers, broom and straw, grains and flours, jute, flax, hemp, cotton, wool, carpet dust, street sweepings, tobacco-box dust, hides and leather, felts, rags, paper, horsehair, etc. Typical of the diseases caused by organic dusts are: flax dressers' disease, a kind of pneumonia due to the inhalation of particles of flax; alkaloidal poisoning from African boxwood by workmen engaged in shuttle making, and malignant pustule and a febrile disease among rag sorters."[2]

Most persons contemplating the subject of dust and its hygienic aspects for the first time assume that the dangerous factor lies in the distribution of microorganisms in the atmospheric contamination. Dust thus is a convenient term which may include a large variety of atmospheric impurities. The dust of the home, the schoolroom, the theater or the street can scarcely be of the same character, even if in attenuated amounts, as that which obtains in the distinctively dusty trades. Of what does it consist? A recent analysis of the "dust" collected in a vacuum cleaner from the book shelves of the library of an educational institution[3] disclosed, on microscopic examination, hair, green wool, white wool, cotton fibers, fly wings, sand grains, wood, paper, string, celluloid, pieces of finger nails, metallic iron and leather. The hair was probably derived from soft hats; the wool and cotton fibers from clothing; sand from the mud tracked in on shoes and the gradual pulverizing of the floor; fly wings from dead flies, and paper from book leaves. The remaining articles present explain themselves. In a water suspension of this dust, no life could be detected with a lens magnifying 320 diameters.

A qualitative examination of the "library dust" showed the presence of the elements iron, aluminum, sodium and calcium, which are easily accounted for by the wear and tear of materials of obvious proximity. One of the chief points of interest was the finding of the *Bacillus coli communis*. Rees suggests that it may come from several sources, the most probable one being the hands while handling books. The bacillus might also be present because of the coughing, sneezing and possible expectoration of people using the library. The total number of bacteria in the dust of

1. Hoffman, F. L.: Statistical Studies Relating to Occupational Diseases, in Kober, G. M., and Hanson, W. C.: Diseases of Occupation and Vocational Hygiene, Philadelphia, 1916, p. 777.

2. Baskerville, C.: New York Med. Jour., Nov. 23 and 30, 1912.

3. Rees, R. R.: The Analysis of "Dust" Collected in a Vacuum Cleaner from the Book Shelves of the Rensselaer Polytechnic Institute Library, Science, Oct. 27, 1916, p. 618.

such a confined space as a library would naturally be high, as the dust would catch the bacteria and have a tendency to hold them.

It might be argued, as Rees does, that where the colon bacillus survives, more harmful bacteria might also remain, such as those producing typhoid fever, cholera, diphtheria and especially tuberculosis, which latter disease is caused by a bacillus especially able to resist the sterilizing influence of drying. But the experience of the comparative freedom of paper money, books, and many other articles frequently handled by man, from extensive contamination with harmful micro-organisms gives a feeling of a security from such possible sources of bacterial danger which may or may not be entirely justified. Only extensive researches can determine the real limits of safety from the commonest dangers of dust in everyday life.

## Current Comment

### COMPULSORY HEALTH INSURANCE

The United States is practically the only large industrial nation which has not adopted compulsory health insurance. A number of states have enacted workmen's compensation laws, which may be regarded as the entering wedge; this will undoubtedly be followed by similar legislation which will provide compensation for medical care during disability from sickness, and include not only the breadwinner but also the dependent members of the family. While the medical profession has a very practical interest in the subject, because of the duties and responsibilities assigned to it in the carrying out of these laws, few physicians have recognized its importance. The mass of the members of our profession seem not to have awakened to the fact that the interests of the public, as well as their own, require them to become informed on the question and to take an intelligent, active part in framing legislation which is already being considered in a number of states. In THE JOURNAL, May 6, 1916, it was announced that a committee under the chairmanship of Dr. Alexander Lambert, chairman of the Judicial Council, had been appointed to compile information in regard to social insurance and the relation of physicians thereto. This committee submitted a report to the House of Delegates[1] at the Detroit session. The American Association for Labor Legislation prepared a preliminary draft of a model bill on social insurance in which it has properly left blank the section providing for medical services, while asking the assistance of the medical profession to work out this phase of the problem. In this issue is a paper on "Health Insurance and the Medical Profession"[2] by Dr. Lambert, in which suggestions are made for defining the conditions for medical service under social insurance. Like the model bill of the American Association for Labor Legislation, Dr. Lambert's paper is not to be regarded as the final word on the question, but as suggesting a basis for discussing the conditions under which medical services may be rendered in the proposed scheme of health insurance. THE JOURNAL again emphasizes that the time for the medical profession to interest itself in social insurance legislation is now, while legislation is in a formative stage. It is hoped that the publication of Dr. Lambert's paper will be followed by a constructive discussion of health insurance in the columns of THE JOURNAL by its readers.

1. Report of the Committee on Social Insurance, THE JOURNAL A. M. A., June 17, 1916, p. 1951.
2. See page 257.

### A MEDICAL COMMISSION, BUT NO MEDICAL MAN ON IT

According to the newspapers, President Wilson has nominated as members of the workmen's compensation commission, to administer the federal Employees' Liability Act, the Reverend R. McMillan Little of Swarthmore, Pa., a preacher in the United Presbyterian church; a Mrs. Axtell of Bellingham, Wash., a social worker and a defeated candidate for Congress, and a J. J. Keegan of Indianapolis, a member of the International Association of Machinists, formerly a member of the state legislature, and more recently a commissioner of conciliation in the Department of Labor. The first of those mentioned above is stated to be a Republican, the second a Progressive, and the third a Democrat; none is a physician. Probably 90 per cent. of the work of the commission will be medical in character.

### POISON THE FLY

Although this is not "fly season" in most parts of the United States, the desirability of preparedness may serve as an excuse to refer to antifly measures at this time. In *Public Health Reports* it was pertinently remarked:

> The practice of swatting, despite the faulty biologic reasoning so often urged by its enthusiastic supporters, whereby the effectiveness of a single swat is multiplied many millionfold, certainly does possess the advantage of a definite 100 per cent. efficiency. Its disadvantage lies chiefly in the effort and earnestness which it demands, factors which are apt to be affected by rising temperature inversely as the multiplication rate among the flies.[1]

The problem of destroying the fly larvae in their breeding places, notably in horse manure, is complicated by the fact that many efficient larvicides ultimately produce an injurious effect on the manure so that it cannot be applied in agricultural practice without damage to plant growth. This has greatly restricted the promise which borax early gave as a suitable and comparatively inexpensive larvicide. The cost of any treatment which must be extensive is also a restrictive item with respect to the application of some otherwise efficient agents. Products like cyanids, Paris green and other arsenicals are potent but too toxic for general use on a large scale. The newest recommendation of the Department of Agriculture is powdered hellebore, an effective larvicide without

1. Phelps, E. B., and Stevenson, A. F.: Fly Poisons, Pub. Health Rep., 1916, **31**, 3033.

action on plant growth.[2] For killing flies which have escaped destruction in the larval stage, the Hygienic Laboratory of the Public Health Service has found an eminently satisfactory new agent in salicylic acid. In 1 per cent. solution it destroys flies which consume it. Salicylic acid, unlike the more potent 1 per cent. solution of formaldehyd, is not an objectionable substance to handle, and there is little danger of toxic effects from accidental consumption of considerable doses of it. With such powerful chemical guns ready to be trained on both the larvae and the adult flies, the antifly campaign of the coming season ought to be memorable for the beneficent effects of its potent instruments of destruction.

### CHEAP ALUM FOR WATER PURIFICATION

Any development of the process of water purification that diminishes cost is worthy of consideration from the public health standpoint. Such an improvement appears to be the new method of making alum recently devised by a well known water purification chemist in this country. The process is already in use in four water-filter plants in the United States and one in Canada. The chemical improvement is described in a recent number of *Engineering News*,[3] and the notable advantages it presents are there set forth in detail. Not only is the alum produced at a low cost, but also it is more effective as a coagulant. The advantages are thus summed up:

> Alum is made regularly at the several works, by means of simple and low-cost installations. It is made up daily—"as you wait," almost—by the ordinary force and under the direction of the chemist or other head of the purification works. The resulting product is not only much cheaper than commercial alum but is also far better suited to use as a coagulant—one reason why it is cheaper.

2. Cook, F. C., and Hutchison, R. H.: Experiments During 1915 in the Destruction of Fly Larvae in Horse Manure, Bull. 408, U. S. Dept. Agric., Oct. 28, 1916.
3. Engin. News, Jan. 4, 1917, p. 36.

**Proposed Investigation of Habit-Forming Drugs.**—In a twenty-page pamphlet for the information of Congress, for consideration in connection with pending amendments to the Harrison Narcotic Law, Charles B. Towns, New York, urges that Congress empower the president to appoint a committee, with adequate authority and money, to conduct hearings and make investigations on the drug problem. The findings of such a committee, it is said, would enable the states to enact properly correlated legislation. According to Mr. Towns, not more than 10 per cent. of those addicted to drug habits are excusable because of physical disabilities. Pointing out defects in the Harrison Narcotic Law, Mr. Towns claims that any person may have as many physicians as he chooses prescribing for him at the same time, and says: "The doctor does not have to find out whether or not the patient is a confirmed drug taker; he can take the man's word for it and prescribe just what the patient asks for." He suggests that the manufacturing, selling, prescribing and administering of opiates be strictly limited to crude opium, laudanum and paregoric (he does not mention apomorphin), which would not inconvenience the medical profession, and would eliminate every unfavorable hazard incident to the use of habit-forming drugs. The physician is to be held to an accounting for such opium, laudanum and paregoric as he personally prescribes or administers. The regulation of the sale of hypodermic syringes is recommended. The nurse is not to be allowed possession of a hypodermic needle except on a physician's order, and then the dose administered is to be at all times strictly regulated by the physician.

## *Medical News*

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### ALABAMA

**New State Health Officer.**—Dr. William H. Sanders, Montgomery, who has served the state for nearly twenty-one years as state health officer, retired, January 9, on account of ill health. Dr. Samuel W. Welch, Talladega, has been appointed health officer.——Dr. William W. Dinsmore, Montgomery, will become state prison inspector, about April 17, succeeding Dr. William H. Oates, Montgomery.

### CALIFORNIA

**New Buildings at County Hospital.**—Bids have been received by the Los Angeles County Board of Supervisors for the construction at the County Hospital of seven additional units: five tuberculosis wards, each averaging 44 by 150 feet, a dining hall and a maternity building.

**Proposes Merger of Health Board.**—A bill is to be introduced in the legislature by Senator Edgar A. Luce, San Diego, which provides for the merger of the state boards of health, medical examiners, dental examiners, optometry and embalmers in a single board to consist of three members.

**State Examiners' Board Elects Officers.**—At the annual meeting of the State Board of Medical Examiners, held in Sacramento, January 9, Dr. Arthur M. Smith, Oakland, was elected president; Dr. Percy T. Phillips, Santa Cruz, vice president, and Dr. Charles B. Pinkham, San Francisco, secretary-treasurer (reelected). At this meeting the board is said to have revoked the license of Dr. Calvin L. Case, Oakland, charged with having prescribed morphin for a drug addict not under his continuous care.

**Memorial Hospital.**—Plans have been prepared for the new John P. Scripps Memorial Hospital for working men and women in San Diego. As a preliminary step, the San Diego Diagnostic Group Clinic for John P. Scripps Foundation is at once to be put into operation in the Scripps residence, which has been donated for that purpose. Mr. Scripps guarantees a sum up to $250,000 for the clinic and the erection, furnishing and equipment of the hospital. He also agrees for a term of years to meet, up to the sum of $30,000, any deficit in the amount required for the maintenance of the institution. Drs. Bernard J. O'Neill, Harry C. Loos, John E. Jennison, Vernon G. Clark and Harold A. Thompson comprise the executive committee of the institution.

### CONNECTICUT

**Personal.**—Dr. Edward J. Murray, Meriden, has been appointed superintendent of the Southwestern Minnesota Tuberculosis Sanatorium, Worthington, Minn.

**Hartford Physicians Elect.**—At the seventieth annual meeting of the Hartford Medical Society, January 2, Dr. Charles C. Beach was elected president; Dr. Charles E. Taft, vice president; Dr. Amos T. Harrington, secretary, and Dr. Philip D. Bunce, treasurer. The Hartford Medical Society Cup was awarded to Dr. Everett J. McKnight.

### ILLINOIS

**Personal.**—Dr. Charles B. Johnson, Champaign, has been appointed a director of the Champaign County Tuberculosis Sanatorium, which was authorized at the November election. ——At the annual meeting of the staff of St. Francis' Hospital, Kewanee, January 11, Dr. Peter J. McDermott was elected president; Dr. Gideon H. Hoffman, vice president, and Dr. H. Nelson Heflin, secretary, all of Kewanee.——Dr. William L. Hanson, Belleville, is on his way to England, where he will enter the Military Hospital Service.——Prof. Julius O. Stieglitz has been elected president of the American Chemical Society for 1917.

#### Chicago

**Smallpox.**—Two cases of smallpox were found, January 14, one in St. Luke's Hospital, and the other in Cook County Hospital. Both patients were taken to the new Isolation Hospital.

**New Superintendent of Hospital.**—Sister Mary Rita of the Order of Mercy has assumed the duties of superintendent of

the Mercy Hospital, succeeding Sister Mary Raphael McGill, deceased.

**Convalescent Home for Wesley Hospital.**—Mrs. Sarah Wheeler has donated her home and property in Lake Bluff, valued at $50,000, to the Wesley Memorial Hospital. The property will be known as the Wheeler Convalescent Home.

**New Officers.**—Chicago Society of Internal Medicine, January 22: president, Dr. Robert B. Preble; vice president, Dr. Rollin T. Woodyatt, and secretary-treasurer, Dr. Charles A. Elliott (reelected).——Chicago Ophthalmological Society, January 15: president, Dr. Paul Guilford; vice president, Dr. Francis Lane, and secretary-treasurer, Dr. Major H. Worthington.

**Laboratory Building for County Hospital.**—A subcommittee of the executive committee of the Cook County Hospital staff recently prepared a memorandum which was submitted to Mr. Peter Reinberg, president of the Cook County Commissioners, concerning the provision of a laboratory building for the Cook County Hospital. The committee consisted of Dr. Edwin R. LeCount, chairman, and Drs. J. Rawson Pennington, Maximilian Herzog, David J. Davis and Robert F. Zeit. The committee notes that there is great need of a new building for laboratory service on the Cook County Hospital ground and that the temporary quarters now occupied are crowded and wholly inadequate. An investigation was made several years ago concerning the need of the institution for a laboratory building, and this need is now much greater. The original report of the committee appeared in the transactions of the county board, and it is proposed to elaborate the report and bring it up to date if the commissioners decide to take action in the matter.

**Personal.**—Dr. William Healy, who has been head of the Chicago Juvenile Psychopathic Institute for the last seven years, has resigned to accept the position of director of the Harvey H. Baker Foundation, Boston. This foundation was established in memory of the late Judge Baker of the Juvenile Court, to aid that court by making psychopathic examinations of infant children. Dr. Healy will be given a complimentary dinner, January 30, by the Chicago Ethical Society at the City Club.——Dr. George G. Davis, lieutenant colonel of the Royal Army Reserve Medical Corps, spoke before the Chicago Alumni Club, January 20, on his experiences in a British base hospital in France.——Dr. Roscoe C. Giles heads the list of eligibles for appointments on the staff of the Municipal Tuberculosis Sanatorium.——Dr. Arthur Schuettler was operated on for appendicitis in the Ravenswood Hospital, January 18. ——Dr. Arthur C. Beyerlein, Colon, Panama, is visiting his parents in Chicago.——Dr. William D. Napheys has been appointed a member of the staff of the Government Hospital for the Insane, Washington, D. C.——Dr. Allen B. Kanavel delivered three addresses on cancer in Lincoln, Neb., January 6, speaking before the Women's Club, the physicians of the city and the public.

## KANSAS

**Personal.**—Dr. Bert L. Stinson, Great Bend, has been elected health officer of Great Bend and physician of Barton County. ——Dr. Charles M. Siever, Holton, has been elected physician to the Kansas State Agricultural College, Manhattan.

**Asks Large Appropriation for Sanatorium.**—Dr. Chauncey S. Kenney, superintendent of the State Tuberculosis Sanatorium, Norton, has asked an appropriation of $180,000 for new buildings and improvements, and one of $120,000 for maintenance and salaries for the next two years. Dr. Kenney claims that these appropriations will permit the construction of six new pavilions accommodating twenty patients each, an administration building, water works and fire protection, and enough help to farm the 240 acres of land at the institution.

## MAINE

**Licenses Revoked.**—An official communication states that at the meeting of Maine Board of Registration of Medicine, held Nov. 14 and 15, 1916, the licenses of Clarence J. Prickett and Reuben Calhoun Clinkscales were revoked on account of fraud in connection with the obtaining of their licenses, both having claimed to have graduated from the extinct Southern College of Medicine and Surgery of Atlanta, Ga.

**New Officers.**—York County Medical Society, eighty-seventh quarterly meeting, at Biddeford: president, Dr. Charles E. Cook, South Berwick; vice president, Dr. Clarence F. Kendall, Biddeford, and secretary, Dr. A. Leon Jones, Old Orchard.——Kennebec County Medical Society, at Augusta, December 7: president, Dr. Oscar C. S. Davies, Augusta; vice president, Dr. Arthur U. Desjardins, Waterville, and secretary, Dr. Sylvester J. Beach, Augusta.

## MARYLAND

**Hospital and Ambulance Companies Mustered Out.**—Field Hospital Company No. 1 and Ambulance Company No. 1, commanded by Major J. Harry Ullrich, M. C., Md. N. G., which have been on duty at Eagle Pass for six months, were mustered out of the United States service, January 6.

**Meetings.**—At the annual meeting of the Baltimore County Medical Society, held January 17, officers were elected as follows: president, Dr. Martin F. Sloan, Towson; vice president, Dr. J. Percy Wade, Catonsville, and secretary-treasurer, Dr. Frank W. Keating, Owings Mills. It was decided to devote the next meeting to mental diseases of children and to invite the Baltimore and the Howard County Medical associations to meet with them.

**Personal.**—Senior Surg. Henry R. Carter, U. S. P. H. S., Baltimore, superintendent of the Marine Hospital, is at Columbia, S. C., where he will superintend sanitary work on the new filtration plant in that city. In his absence Dr. Charles Vogel, Baltimore, will have charge of the hospital. ——Dr. William E. Martin, Harrisonville, narrowly escaped being killed recently when his automobile skidded on the ice and rolled over an embankment. He escaped with body bruises.——Drs. Herbert Schoenrich and G. Milton Linthicum, Baltimore, who have been serving with the Fifth Infantry, have resigned.——Dr. Archibald C. Harrison, Baltimore, was operated on recently for appendicitis at St. Joseph's Hospital. ——Dr. John F. Hogan has been placed in charge of the recently organized Bureau of Communicable Diseases, Baltimore. Under this bureau are included health wardens, nursing, the tuberculosis dispensary, school physicians, vital statistics, fumigation, complaints, tenement houses and the Sydenham Hospital.——Dr. Stacy T. Noland, Cambridge, assistant physician at the Eastern Shore State Hospital, has resigned to accept a similar position at the Montana State Hospital for insane.——Dr. Richard E. Yellott, Fallston, is reported to be seriously ill at the Hebrew Hospital, Baltimore.

## MASSACHUSETTS

**New College of Pharmacy Building.**—Through the generosity of George Robert White, Boston, the Massachusetts College of Pharmacy is to have a new building located on Longwood Avenue, Roxbury.

**New Bills Regarding Tuberculosis.**—The Massachusetts Association of Boards of Health has submitted two bills to the Massachusetts legislature: The first is an act relative to the removal of certain persons affected with tuberculosis, and the second an act to provide for the care and treatment of wilfully careless and incorrigible tuberculosis patients.

**Asks Time to Study Insurance Problem.**—Dr. Samuel D. Woodward, president of the Massachusetts Medical Society, has presented a petition asking the special recess committee on social insurance of the state legislature not to recommend any legislation on health insurance until the medical profession and the public have had more time to study the question.

**Health Boards Meet.**—The annual meeting of the Massachusetts Association of Boards of Health was held at the Brunswick Hotel, Boston, January 25. Dr. Donald B. Armstrong, Framingham, presented a paper on "The Community Health and Tuberculosis Demonstration in Framingham," and Dr. Thomas F. Harrington, Boston, medical deputy commissioner of the state board of labor and industries, delivered an address on "Industrial Health."

**Personal.**—Dr. Orran G. Gilley, physician at the Charles Street Jail, Boston, for nearly five years, has resigned and has been succeeded by Dr. Harry H. Colburn.——Dr. Thomas B. McQuaid has been appointed city physician of Everett, succeeding Dr. Ralph W. McAllester.——Dr. Richard H. Morris has been appointed a member of the board of health of Everett.——Dr. Scott W. Mooring has been elected a member of the board of health of Gloucester, succeeding Dr. Charles H. Morrow, retired after ten years' service.——Dr. Howard A. Streeter, Marblehead, has been appointed district health officer in Berkshire District, succeeding Dr. Stanley H. Osborn, North Adams.——Dr. William J. Brickley, for six years resident surgeon at the Haymarket Square Relief Hospital, Boston, has resigned to enter private practice.——Dr. Henry S. Rowen, Brighton, has been appointed a trustee of the Boston City Hospital, succeeding the late Dr. Francis J. Keany.

## MICHIGAN

**Effect of General Vaccination.**—The general vaccination order issued by the health commissioner of Escanaba a year ago resulted in entire freedom of the city from smallpox during 1916. Surrounding towns are said to have had many cases.

**State Board Asks Funds.**—The state board of health, in its annual report, asks for an increased appropriation owing to the expense of the new laboratory in the Upper Peninsula. It recommends that the state be divided into districts, and that the counties should organize as units for tuberculosis work. A special appropriation for tuberculosis is asked for, and the need for two state sanatoriums for the treatment of tuberculosis is emphasized.

## MINNESOTA

**Hospital Opened.**—The Lake City Hospital was opened New Year's Day.

**Personal.**—At the annual meeting of the state board of health, Dr. William A. Jones, Minneapolis, was reelected president; Dr. Christopher Graham, Rochester, vice president, and the executive committee was also reappointed without change.——Dr. Harry M. Guilford has been appointed commissioner of health of Minneapolis.

**New Sanatorium Opened.**—The sanatorium of the Southwestern Minnesota Tuberculosis Association, near Worthington, opened, January 14, cost $100,000, one half provided by the state and the other half by the counties of Rock, Pipestone, Lincoln, Lyon, Murray, Nobles, Jackson and Cottonwood. The institution accommodates fifty patients.

## NEW YORK

**Health Department Banquet.**—The tenth annual banquet of the health department of Buffalo was held, January 17, at the Hotel Statler. The principal address was delivered by Dr. William A. Evans, Chicago, on "Health Insurance." Dr. William G. Bissell, Buffalo, was chairman of the committee of arrangements.

**Personal.**—Dr. S. Meredith Strong, Flushing, has been appointed president of the staff of the Flushing Hospital, succeeding Dr. Charles B. Story, Bayside.——Dr. Anthony F. de Graffenried, Bayside, has been elected secretary of the staff of the hospital, succeeding Dr. George J. Lawrence, Flushing, who is on duty on the southern frontier.——Dr. James E. Mansfield has succeeded Dr. Maurice J. McGrath as local surgeon of the New York Central Lines, at Oswego.——Dr. Barton D. Skinner, Greenport, was struck on the head by a falling limb of a tree, January 4, and rendered unconscious.

### New York City

**New Officers.**—Bronx County Medical Society, December 20: president, Dr. J. Lewis Amster; vice presidents, Drs. John J. Decker and Maximilian Ziegler; secretary, Dr. Isidore J. Lansman, and treasurer, Dr. Philip A. Eichler.

**Harvey Society Lecture.**—The next lecture of the present course will be given at the New York Academy of Medicine on the evening of February 3 by Prof. James W. Jobling, Vanderbilt University. His subject will be "The Influence of Nonspecific Substances on Infections."

**Personal.**—Dr. William S. Stone has been appointed assistant director of cancer research in the Memorial Hospital.——Dr. Simon Flexner has been elected foreign associate member of the Paris Academy of Medicine.——Dr. Henry Kendall has been appointed assistant visiting physician to the Sydenham Hospital.

**Annual Report of Academy.**—The report of the president of the New York Academy of Medicine shows that in the last twenty-five years the activities of the academy have increased five-fold, and that at present the library, reading room and journal room are greatly overtaxed. Two solutions of this difficulty are discussed. One is the sale of the present property and the erection of a new plant elsewhere; the other is the erection of an addition to the present building on the adjacent 25-foot lot running through from Forty-Third to Forty-Fourth Street and already in possession of the academy. The second plan seems most practical and would probably provide abundant facilities for the next twenty years.——The council reports the successful formation of a new section on historical medicine. The trustees report that during the past year the endowment fund has been increased by $1,600 and the general permanent fund by $100.——The academy extension fund has received paid subscriptions amounting to $112,328.——The committee on library reports the receipt of $100 from the First District Dental Society for the purchase of books and journals on dentistry.——From Dec. 9, 1915, to Dec. 10, 1916, there were added to the library 3,911 volumes and 3,372 pamphlets.

## NORTH DAKOTA

**New Hospital for Minot.**—Articles of incorporation have been filed with the secretary of state by the Minot General Hospital Company with a capital stock of $200,000.——John Maloney, Minot, has offered to donate 4 acres of land for a site on which to erect this hospital. He also agrees to excavate the basement and to provide pure drinking water for the institution.

**Appropriation Asked for Health Laboratory.**—For the protection of the health of the people and to aid in the reduction of the death rate, the state public health laboratory has asked an appropriation of $12,000 from the legislature. The main laboratory is situated at the University of North Dakota, Grand Forks, and there are three branches, one each at Fargo, Minot and Bismarck.——The new quarters of the branch of the public health laboratory at Minot are in the Anderson Building, and the laboratory is in charge of Dr. Albert M. Larson.

## PENNSYLVANIA

**New Officers.**—At the annual meeting and banquet of the Allegheny County Medical Society, held at Pittsburgh, January 9, the chief address was given by Dr. William S. O'Neill Sherman of the United States Steel Corporation on the treatment of wounds in war. Dr. John M. Thorne was elected president; Dr. Ellis S. Montgomery, vice president; Dr. Carey J. Vaux, secretary, and Dr. William C. Bryant, treasurer.

**Personal.**—Dr. Jacob T. Butz, for twelve years secretary of the Lehigh County Medical Society, was presented with a black alligator skin traveling bag and a traveling toilet set by the society.——Dr. Walter Lathrop has been reelected surgeon in chief and superintendent of the Hazelton State Hospital for the twentieth consecutive term.——Dr. Charles E. Hannon has been elected president of the staff of Mercy Hospital, Johnstown.——Dr. Lawrence A. Sheridan, Wilkes-Barre, has been elected president of the medical and surgical staff of Mercy Hospital.——Dr. Wilson H. Rothermel, Reading, who has been ill and confined to his house for seven weeks, has resumed his professional duties.——Dr. Harry J. Kirby, Ellsworth, is reported to be critically ill in a Harrisburg hospital, the result of an automobile accident.——Dr. Eugene B. Campbell, Williamsport, is reported to be seriously ill.——Dr. Samuel S. Shields, Carbondale, fell on an icy sidewalk, January 6, fracturing his left arm at the wrist.

### Philadelphia

**Medical Club Election.**—The Medical Club of Philadelphia held its annual meeting, January 19, and elected Dr. Charles K. Mills, president; Drs. Gassaway O. Ring and William Martin, vice presidents; Dr. William S. Wray, secretary, and Dr. Lewis H. Adler, treasurer.

**Symposium on Military Surgery.**—The program of the College of Physicians of Philadelphia for January 22 was devoted to "Military Surgery, Based on Experiences in the American Ambulance." Dr. Fred T. Murphy, St. Louis, read a paper on "The Result of Operations on Bones"; Dr. Robert D. Osgood, Boston, discussed the "Orthopedic Phases of Military Surgery"; Dr. Charles F. Mitchell read a paper on "Compound Fractures," and Dr. Richard H. Harte one on "Plastic Operations."

**Personal.**—Dr. William W. Keen was the guest of honor at a dinner given by the faculty of Brown University at the University Club, Providence, R. I., January 16.——Dr. W. Wayne Babcock, chief of the surgical staff of the Samaritan Hospital, who underwent an operation for appendicitis, December 15, returned home convalescent, January 6.——Dr. R. Tait McKenzie, who recently returned from England, delivered an address before the Los Angeles County Medical Society, December 29.

## TEXAS

**Health Campaign in Polk County.**—To demonstrate the feasibility of preventing uncinariasis, typhoid fever, paratyphoid, malaria and pellagra, a four months' campaign has been commenced in east Texas under the direction of Dr. Wesley C. Becker, field director of the International Health Board of the Rockefeller Foundation. This board, with the cooperation of the state board of health, is financing this campaign.

**Personal.**—Dr. Lee O. Foster, Fort Worth, was run over by an automobile, December 23, and severely injured.——State Health Officer William B. Collins has returned from a tour of the principal ports of Central America and the West Indies.——Dr. Philip Douglas Spohn, Corpus Christi, has been appointed a surgeon in the hospital service of England and has left for his new post of duty.——Dr. Samuel E. Thompson, medical director of the State Tuberculosis Sanatorium, Carlsbad, has resigned.——Dr. Marcus M. Carr, superintendent of the Parkland Hospital, Dallas, has resigned.

## CANADA

**Prevalence of Syphilis.**—Dr. Charles K. Clarke, superintendent of the Toronto General Hospital, headed a deputation to Ottawa last week which appeared before the Canadian Conservation Commission and presented startling figures to that commission. It stated that more than 12 per cent. of the patients admitted to the public wards of the Toronto General Hospital for various diseases, medical and surgical, have syphilis. Dr. Clarke considers this a greater menace than tuberculosis. Dr. William Boldie asserted that Dominion control was necessary owing to the immigration laws being made by the Dominion Parliament. Others who accompanied the delegation were Prof. Benjamin P. Watson, Prof. John J. Mackenzie, Dr. Charles H. Hair, chief of the special treatment clinic at the Toronto General Hospital, and Dr. Herbert K. Detweiler, all of Toronto.

**Hospital News.**—The Laval Hospital Unit is being established temporarily in Paris with 1,400 beds. Its own building, which is now under construction, will be ready in May.——The Canadian Pacific Railway Company has agreed to transform six sleeping cars into hospital cars for the Canadian Military Hospitals Commission. This will make a total of sixteen cars under the control of the commission. These cars will be used between Winnipeg and the Pacific Coast, while the ten government cars will be used between Halifax and Winnipeg.——The Canadian Hospitals Commission is advocating the sending of all military medical men in Canadian hospitals overseas, filling their places by returned surgeons.——A deputation headed by Sir Adam Beck came down to Toronto recently from London, Ont., to request the Ontario government to establish a hospital in London for returned soldiers. It was suggested that a new building be erected on the grounds of the Hospital for Mental Diseases and that later on it could be utilized for hospital purposes for those afflicted with mental disease.

**Personal.**—Dr. Melville H. Embee has returned to Toronto from overseas on leave.——Capt. Alexander H. Taylor, medical officer, Twenty-Fourth Battalion Victoria Rifles, has been awarded the Military Cross for conspicuous bravery.——Dr. H. R. Smith, Toronto, medical officer, First King's Own Royal Lancasters, was severely wounded in December and when last heard from was in the Rouen Hospital.——Dr. William A. Macdonald, Windsor, Ont., has moved to Toronto, where he is attached to Exhibition Camp Base Hospital as an officer in the C. A. M. C.——Dr. F. R. Nicolle (captain), Chatham, Ont., contracted trench fever some months ago. He has been in King's Hospital, London, England, since November.——Dr. Charles Stuart Wynne, sometime house physician at the Toronto General Hospital, has been awarded the Military Cross, "for working all night dressing and attending the wounded in the open, thereby saving many lives."——Capt. Leeming A. Carr, Hamilton, son of Dr. Leeming Carr, has been awarded the Military Cross for continually leading stretcher bearers under heavy fire, and on many occasions himself rescuing wounded men.——Col. Charles W. F. Gorrell, Ottawa, formerly commanding officer, Tablow Hospital, resigned his position some time ago, and when last heard from was ill in a private hospital in London, England.——As a result of representations made to the British Embassy at Washington, Hon. Dr. Henri S. Beland, formerly postmaster general of Canada, who was made a prisoner of war in Belgium early in the campaign, will soon be liberated.——Col. Herbert A. Bruce is not returning to Toronto at the present time. He has accepted from the Royal Army Medical Service the appointment of surgeon in chief to twelve large British hospitals in France, and will likely remain at this post until the end of the war.——Major John A. Amyot, Toronto, formerly director of the Ontario Board of Health laboratories and professor of hygiene and public medicine in the University of Toronto, has been appointed sanitary adviser in England to the Canadian forces.

## GENERAL

**Grayson Now Rear Admiral.**—January 18, President Wilson nominated as one of the five new rear admirals of the navy, two of whom are taken from the Medical Corps, Passed Asst. Surg. Cary T. Grayson, naval aid and personal physician to the president. This promotion advances Dr. Grayson 114 numbers. Dr. Grayson, who was born Oct. 11, 1878, in Virginia, was graduated from the University of the South, Sewanee, Tenn., in 1903, and entered the navy June 28, 1904, as assistant surgeon. He was promoted to passed assistant surgeon three years later, and had had up to the beginning of 1916 a little more than five years' sea service and more than six years' shore or other duty. He was first assigned to duty at the White House during the administration of President Taft and was continued in that position by President Wilson when he assumed the presidency.

**American Academy of Public Health.**—At a meeting held in Cincinnati, October 23, by twenty-nine physicians interested in public health matters, it was decided to establish an organization to be known as the American Academy of Public Health. Qualifications for membership are to be based on achievements in public health work and scholarship in public health science. The meetings of the organization will be devoted to the submitting of reports on public health problems and general discussion by the members. According to the constitution adopted, the membership for the first year is limited to fifty and five new members may be added each year. The following officers were elected pro tem: president, Carl L. Alsberg, Washington, D. C.; vice president, Prof. H. W. Conn, and secretary, Dr. Charles E. North, 30 Church Street, New York.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Servants for the Relief of Incurable Cancer, New York, $5,000, and St. Mary's Hospital for Crippled Children, $2,000, by the will of Miss Eliza Haynes.

St. Vincent's Hospital, New York, $260,000 for a cancer hospital to be operated as a branch of the institution.

Germantown (Philadelphia) Hospital, a donation of $110,000 as a memorial for her daughters, Mrs. Charles W. Harkness, New York, and Mrs. Anna W. Darnell, by Mrs. William G. Warder, Germantown.

Dr. Clarence P. Foss, Brunswick, Me., the entire estate of Mrs. Susan York, Brunswick, valued at $20,000.

Montefiore Home and Hospital, New York, a donation of $100,000, by Jacob H. Schiff.

Hahnemann Hospital, New York, $72,494, by the will of Juliet C. Percival.

Mercy Hospital, Chicago, Mercy Orphan Asylum and St. Charles, Illinois, School Board, the estate of Robert J. Haynes, valued at more than half a million dollars, subject to the upholding by the court of the decision of Master in Chancery Hamlin.

Massachusetts Homeopathic Hospital, Boston, $25,000 as a trust fund to be known as the Kate A. Morrell Fund, by the will of George Morrell.

**Universal Military Training.**—On December 27 letters were mailed to the presidents and to certain past presidents of the American Medical Association and of other national medical organizations of a special character, and to the same officers of state societies inviting them to occupy the time at the hearing before the Senate Committee on Military Affairs which had been assigned to Dr. Lucien Howe, Buffalo, or to join in a letter to the chairman of the committee approving of universal military training. Out of a total of 117 replies received previous to the hearing, 112, including presidents or past presidents of thirty-two state associations, gave their unqualified approval as indicated in the letter; four were doubtful or hesitated to commit themselves and one was opposed to the military aspects of the bill. Several letters came too late to be presented. At the hearing, Dr. Howe made clear the positions of those who signed the letter to the committee, read abstracts from a number of the letters, and presented them to the committee. In presenting these letters, stress was laid on the fact that each signer expressed only his individual opinion, and not that of any organization with which he was then or had been associated. The bill was advocated because of two provisions which would tend to improve the health of boys or young men. These were: first, a uniform and thorough examination of boys or young men, such as would reveal any physical imperfections, and therefore lead to the adoption of means for their correction, and second, the gymnastic exercises and military training would tend to improvement of the general health. Dr. Hugh H. Young, Baltimore, then presented to the committee other physicians who joined in the plea for universal training—beginning with simple exercises at home for boys of about 12, or if that plan were deemed impracticable by the com-

mittee, they advocated intensive military training for young men of about 18.

## FOREIGN

**Extra Sugar for Infants in Berlin.**—A card is now issued in Berlin entitling infants under 1 year old to an extra half pound of sugar per month.

**Exchange of Medical Prisoners of War.**—The *Münchener medizinische Wochenschrift* states that Germany and Russia have come to an agreement respecting the exchange of physicians who have been taken prisoners in the war. One physician is to be retained for each 2,500 war prisoners, and all the rest are to be allowed to return to their homes.

**Universal Patriotic Service.**—The German Reichstag recently passed a bill imposing universal patriotic service on every male German between the ages of 7 and 60. According to the new law, if one locality is overabundantly supplied with physicians, while another has too few, some of the physicians can be transferred. The *Deutsche medizinische Wochenschrift*, commenting on the bill, remarks that it is to be hoped that such measures will be enforced only in cooperation with medical organizations, and will not be carried out arbitrarily. Physicians will probably be called on to report on the conditions of health of persons affected by the law. Medical students can be called to care for the sick and wounded, and the time thus spent will be credited to them as those on active service now are being credited.

**Child Welfare Work.**—The Prussian minister of the interior has recently notified the provincial authorities (*Regierungspräsidenten*) to take active measures at once to train the older girls and the mothers in means to combat infant mortality, and in child welfare work of all kinds. Besides courses of lectures on the care of infants and young children, public lectures, mother's evenings and similar measures are to be inaugurated. He urged that the woman's organizations, the Red Cross and other benevolent associations endeavor to increase their efficiency. He also suggested that health officers, communal physicians, pediatrists and women physicians, teachers, ministers and others help, either personally or by providing lecturers. In several communities, courses of lectures are being held for young girls and mothers, who meet two or three evenings a week for this purpose, and occasionally visit infant asylums and day nurseries for practical demonstrations. The minister of the interior also urged distribution of pamphlets and circulars on the care of young children.

**Deaths in the Profession Abroad.**—The first woman physician in Switzerland in modern times, and hence the first in Europe, has recently died at Zurich, Dr. Marie Heim-Vögtlin, aged 71. She had been practicing in Zurich since 1874, and had written a number of popular scientific works, especially on the care of infants.——Bruns, professor of neurology at the University of Hannover and chief of the hospital for children's diseases, aged 58.——P. Herzberg of Berlin, aged 70, the pioneer in Germany for the movement in favor of cremation, long president of the Verein für Feuerbestattung.——J. Benario, long a co-worker with Ehrlich, aged 48.——E. Hagenbach-Burckhardt, professor of diseases of children at the University of Basel, aged 76.——Achille De Giovanni, senator of the realm and director of the general medical clinic of the University of Padua, Italy, aged 78. He was well known as a pathologist, clinician, biologist and philosopher, and had published works in these various lines, especially on the relations between the morphology of the human body and the predisposition to disease. In the last few years he had taken a leading part in the attempt to control the spread of tuberculosis.——E. Gaupp, professor of anatomy at the University of Breslau, aged 56.

**Prophylaxis of Venereal Diseases in Prussia.**—The *Allgemeine medizinische Central-Zeitung* states that the various health insurance organizations of Prussia have established seventy free consulting dispensaries for sexual diseases. A conference was held recently at the Berlin Central Office for Social Insurance which was attended by representatives of the various insurance organizations and of the larger medical associations. Realizing that defective or unsuitable treatment of venereal diseases is a danger not only to the diseased themselves but also a menace to the general welfare, the conference unanimously voted in favor of continuing, after the war, the measures enforced during the war, by the orders of the military commanders, against quackery in the treatment of venereal disease. The conference declared that these diseases can be successfully controlled only when quackery is legally excluded. It should be illegal for any person, not a registered physician, to treat sexual diseases in any way, regardless of the site of the disease. Laws should also be passed prohibiting the dispensing of remedies against sexual diseases by drug stores and other establishments without a physician's prescription, and prohibiting the distribution of circulars and pamphlets which encourage self-treatment of sexual diseases, even in veiled terms, as testimonials, expressions of gratitude, recommendations and advice. All distant treatment of sexual diseases, as well as every public offer to treat patients of this class, should be absolutely prohibited.

## WAR NOTES

**Contributions to British Red Cross.**—The *Times* Red Cross Fund which is being supported also by other newspapers passed the $30,000,000 mark, January 17.

**Italian Field Hospital Shelled.**—An official communication from Rome, January 12, states that Austrian batteries shelled one of the field hospitals at Andrami in the Upper Cordevole, although it was visibly marked with a Red Cross.

**Relief Party Reaches Saloniki.**—A telegram from Saloniki, January 11, states that twenty-eight Americans, comprising Section Ten of the American Field Ambulance in France, have arrived at Saloniki on their way to the French front in Macedonia to relieve another section which has been in service since October.

**The American Red Cross and European War Relief.**—The American Red Cross has issued a statement to the public showing what it has accomplished in European War Relief. From Aug. 6, 1914, to Sept. 30, 1916, there were received contributions of $2,144,968.17, of which $2,007,584.62 was disbursed. Of the money received $412,635.04 was designated and used for certain specific purposes. Supplies valued at $978,309.54 were also donated during this period. During the first months of the war the Military Relief Work of the Red Cross involved the sending of sixteen hospital units to the seven countries engaged in war, at an expense of $352,000. It also joined with the Rockefeller Foundation to send a sanitary expedition to Serbia, which was then suffering from typhus fever. The cost of this expedition was about $180,000. For Serbian relief a quantity of food supplies was shipped across the Roumanian border by way of Hungary to Belgrade. In this way 318 carloads of food supplies were shipped up to the end of August. Food supplies were sent into Serbia from the United States and Switzerland, the approximate cost of this relief being $120,000. Red Cross representatives are now

RED CROSS RELIEF TO THE ALLIED POWERS

| Countries | No. of Shipments | No. of Packages | Purchased Supplies | Donated Supplies Designated | Donated Supplies Undesignated | Total Value |
|---|---|---|---|---|---|---|
| Belgium | 38 | 1,694 | $ 34,590.17 | $ 30,059.11 | $ 13,101.65 | $ 77,750.93 |
| Belgium via Holland | 6 | 507 | 19,971.10 | 16,993.40 | 4,800.00 | 41,764.50 |
| England | 44 | 2,676 | 51,332.45 | 34,544.55 | 44,733.65 | 130,610.65 |
| France | 78 | 12,028 | 123,720.48 | 241,583.77 | 79,860.35 | 445,164.60 |
| Italy | 26 | 655 | 16,141.32 | 16,754.55 | 14,992.70 | 47,888.57 |
| Montenegro | 6 | 372 | 2,708.15 | 9,950.00 | 6,852.60 | 19,510.75 |
| Russia | 32 | 2,740 | 50,392.43 | 34,931.85 | 39,548.50 | 124,872.78 |
| Serbia | 34 | 14,381 | 116,818.24 | 83,348.23 | 34,037.00 | 234,203.47 |
| Total | 264 | 35,053 | $415,674.34 | $468,165.46 | $237,926.45 | $1,121,766.25 |

TO THE CENTRAL POWERS

| | | | | | | |
|---|---|---|---|---|---|---|
| Austria | 14 | 1,891 | $ 18,409.54 | $ 58,153.55 | $ 18,773.00 | $ 95,336.09 |
| Bulgaria | 1 | 51 | 996.25 | ..... | 2,395.15 | 3,391.40 |
| Germany | 12 | 2,512 | 29,481.56 | 73,729.34 | 18,818.40 | 122,029.30 |
| Turkey | 3 | 309 | 7,025.86 | ..... | 7,463.96 | 14,489.82 |
| Prisoners in South Africa and Siberia | 23 | 6,123 | 20,538.64 | 92,884.23 | ..... | 113,422.87 |
| Total | 53 | 10,886 | $ 76,451.85 | $224,767.12 | $ 47,450.51 | $ 348,669.48 |

in Greece, ready with emergency relief funds and supplies for use in Serbia. In conjunction with the Armenian and Syrian Relief Committee a cargo of food, clothing and medical supplies is on its way to Beirut, where it will be distributed jointly by local Red Cross chapters and the Turkish Red Crescent. For many months a Red Cross Committee has provided relief for 5,000 refugees brought from Armenia to Egypt. Working through Vladivostok, Tientsin and Peking, the American Red Cross has done much to help the thousands of prisoners of war and interned civilians in the interior of Siberia. On the preceding page is a summary of the work of the American Red Cross from the outbreak of hostilities until Sept. 30, 1916.

## LONDON LETTER

London, Jan. 1, 1917.

### The State and the Treatment of Venereal Diseases

A memorandum has just been issued by the Local Government Board to county and borough councils setting out the returns required to be made by the authorities of institutions approved by the board under the regulations for the diagnosis or treatment of venereal diseases. The board has also prescribed a form of register to be kept by the pathologists of approved laboratories, and it has prepared for the consideration of hospitals and other institutions a suggested system of case papers and registers. A number of leaflets have been prepared for use, certain of them for the information of patients, and suggestions to local authorities for publicly announcing the facilities to be provided for treatment. Incidentally, mention is made of the fact that at present the board has approved of kharsivan, arsenobillon and novarsenobillon as substitutes for salvarsan. The board recommends that the necessary outfits for the collection of pathologic specimens should be supplied gratuitously to physicians, and it also suggests that a uniform payment of 72 cents per specimen should be made to cover out-of-pocket expenses in the transmission of specimens to laboratories.

A large number of prominent women, including the leading women physicians, continue to advocate in the press compulsory notification of all persons infected with venereal disease, and they point out that compulsory notification exists in Denmark. They say that it has never been found possible to protect the community from the ravages of infectious and contagious diseases by educative means alone; compulsion has always been necessary and has proved the best education. So far the medical profession has opposed compulsory notification on the ground that it would lead to concealment and treatment by quacks, and the government has accepted this decision.

### Trinitrotoluene Poisoning

The manufacture of the high explosive trinitrotoluene on a large scale has led to the discovery that it may be dangerous to the workers. So far there have been fifty fatal cases—a very small percentage when the number of workers is considered. Absorption by the skin appears to be the chief channel by which the vapor becomes poisonous. This absorption is shown by the characteristic yellow staining of the face and hair lasting for some weeks, to which munition workers handling the explosive are exposed. A further stage in this discoloration is the advent of dermatitis, due to the direct irritant action of the poison. Next in order of frequency come digestive troubles in varying degree, and more seriously degenerative blood changes. Worst of all, there is a direct destructive effect on the liver. To the latter change is attributable the toxic jaundice from which the fatalities have ensued. In other cases, the extent of the toxemia is manifested by "the pallor of the face, and the ashen grey color of the lips." The fact has been elicited by the inquiry that some workers are susceptible to the poison and others not. The latter are by far the larger class, and these apparently remain immune, even after long exposure to the poison. On the other hand, any degree of susceptibility is a source of danger to a worker, for among these jaundice has been found to develop rapidly—within the limits of the fifth and sixteenth weeks of exposure. Age, too, seems to be a factor of incidence of the symptoms, as in eight deaths out of eleven, due to jaundice, the sufferers were less than 18 years old. In a matter of such national concern it was imperative to devise means for the protection of the workers, and strenuous efforts are being made to check the evil. A scheme of preventive measures has been elaborated. Only persons of sound health, between the ages of 20 and 50, are employed. All the workers once a week are subjected to medical inspection. Every fortnight they are removed from the trinitrotoluene zone for employment in other departments. Means are resorted to for preventing the formation of trinitrotoluene dust, and for getting rid of fumes. Absolute cleanliness of the face and hands before meals and before leaving the factory is insisted on, and plunge and shower baths are provided.

### The Color Bar at a London Hospital

Probably no civilized country is so free from racial prejudices as England, and it is only on the rarest occasions that a "color line" is ever in evidence, as is illustrated by a recent advertisement in the *Lancet* of the Paddington Green Children's Hospital for house physician and surgeon. The advertisement stated that "as this is a children's hospital, applications from Indian or Egyptian students cannot be entertained." This aroused protests in the columns of the *Lancet* from Indian physicians in this country. One pointed out that he is resident medical officer at East London Hospital for Children, and that the house physician there is an Indian, too. At the same time he held that there is a prejudice against Indians. Another sarcastically asked why the children's hospital is put forward as an excuse for excluding Indians. Does it mean that Indians are objectionable to children and their mothers? He gives his own experience and that of other Indians which shows that this is not true. He adds that the patients have far less prejudice against Indians than the heads of institutions. This is no doubt true. The London poor are quite without racial prejudices. Several Indian physicians practice among them and are most popular. Indeed, their race is in one way an advantage as people have the impression that they are possessed of some special skill denied to the ordinary Englishman. This may be compared to the prejudice in favor of foreigners which exists in several directions. Thus, English musicians have found it an advantage to pose as foreigners.

### The National Institute of Mothercraft

A projected national institute of mothercraft is gradually progressing toward the final realization of an important and far-reaching scheme. The committee includes leading pediatricians and medical women. A site has not yet been found, owing to the difficulty of getting a suitable one in a central position. It is important that the institute should be easily accessible from all parts of London. It is not intended to be a vast school for mothers, but to be the headquarters of all information and material for the training of students and workers concerned in the welfare of mothers and children. On the ground floor will be a day nursery, nursery schools for children of from 3 to 4 and 4 to 5 years, a school for mothers, and an infant clinic. The first floor will be for administration purposes. On the second floor will be the museum and exhibition, the reference and reading library, the observation ward for resident babies, and the students' training department. The third floor will be devoted to laboratory and research work. The aim of the originators of the institute is to make it, when it takes definite form, a place where every effective preventive agency shall be put into operation to combat infant, antenatal and maternal mortality. All the scattered activities will be collected under one roof, and every department will be organized by specialists and linked up in such a way that any provincial authority wishing to adopt, as best suited to its requirements, one branch of infant welfare will find at the institute a practical and complete model to draw on. The institute is intended to be a memorial to those who have fallen in the war, and the Duchess of Marlborough is asking for $1,000,000, the provisional estimate of its cost.

## PARIS LETTER

Paris, Dec. 28, 1916.

### Wounds of the Large Vessels Without Immediate Hemorrhage

This subject continues to command the attention of the Société de chirurgie de Paris. Dr. Planson reported two cases of so-called "dry" wounds of large vessels, that is, wounds not causing immediate hemorrhage (one case of complete division of the femoral artery and one case of almost complete division of the external carotid) following bullet wounds. These two cases differ from those previously reported by Dr. Pierre Duval and his collaborators (The Journal, Nov. 25, 1916, p. 1613) in the length of time (eight days) that elapsed between the receipt of the wound and the onset of the hemorrhage which led to the discovery of the wound. Although both patients recovered, Planson again calls attention (agreeing with Duval and Sencert) to the

danger of death to which these lesions expose the patient, and the necessity of a thorough systematic exploration of the vessels when the site and the direction of the wound have excited suspicion as to the nature of the lesion.

Dr. Pothérat, surgeon at the hospitals of Paris, since the beginning of the war has frequently observed cases of these wounds—which he prefers to term "stanched wounds"—occurring on almost all the main trunks of the arteries. He thinks that many arterial hemorrhages which have been classified as "septic secondary hemorrhages" were in reality arterial hemorrhages caused by trauma but retarded in occurrence by a "stanching" or tamponing action. How long after the trauma does the arterial wound reveal itself by hemorrhage? It is quite variable. Several hours, several days, even several weeks elapse. Pothérat has seen a subclavian artery wound bleed nine days after its receipt—an axillary artery wound after seventeen days—and the artery was almost totally divided. How are we to explain these facts? The wound of the artery can be closed: 1. By the projectile itself or a vestimentary fragment, acting as a stopper. The moment the plug is removed the hemorrhage begins. 2. The edges of the torn artery and particularly the intima curl up into the lumen of the artery; a coagulum or clot is formed and stops the flow of blood; this clot disintegrates or becomes detached in the course of a dressing and hemorrhage ensues. 3. The arterial wound could have produced a localized hemorrhage of little importance, too slight to manifest itself externally but sufficient to produce a hematoma, which, being compressed against the vessel by the adjacent tissues, plugs the wound by compression, and delays the hemorrhage until such time as an inadvertent jar in the course of a dressing of the wound will detach this improvised tampon, and hemorrhage occurs.

To prevent accidents, sometimes fatal, to which these "stanched" wounds of the arteries expose the patients, it is absolutely necessary to make a thorough examination of every case in which the course of the projectile gives cause to suspect a blood vessel wound, even though there is no clinical evidence of this wound. If a vascular lesion is discovered, infinitesimal though it may be, immediate ligation of the artery on each side of the lesion should be done, *loco lœso*.

Dr. Routier observed a patient with a wound in the popliteal space, fracture of the inferior extremity of the femur, and intermittent hemorrhages. Amputation of the thigh at the middle had to be done on account of gangrene of the leg and foot. Dissection of the anatomic specimen revealed a tear in the wall of that portion of the femoral artery lying in Hunter's canal, this tear attaining half the caliber of the vessel. It probably had been caused by a spicule of bone from the femur. It is possible that the interruption of the hemorrhage was due to the artery catching on the point of the fragment, and that hemorrhage occurred at each displacement of the fragment.

Dr. Bazy some time ago observed a case of wound of the femoral artery caused by revolver shot, in which formidable hemorrhage did not occur until the third day after receipt of the wound. This hemorrhage was easily stopped by compression, and subsequent ligation of the vessel. The patient recovered.

Dr. Pierre Duval reported a case of complete section of the internal jugular and common carotid by a shell explosion which was operated on successfully by Dr. Fiolle.

### The War

#### ACUTE ENDOCARDITIS AND PERICARDITIS AMONG THE SOLDIERS AT THE FRONT

Among 1,719 soldiers treated during fourteen months in the contagious disease division of the military health service, Drs. Nobécourt and Peyre observed that thirty-four (1.97 per cent.) were affected with endocarditis and pericarditis. Various infectious processes were responsible for one case of mitral endocarditis and three cases of pericarditis. Acute articular rheumatism was the cause of thirty of these cases of cardiopathy. The mitral valve was always affected and frequently (in nine cases) also the aortic valve. Pericarditis was present in nine patients and in five of these there was also an endocarditis. Age has had a manifest influence on the frequency of cases of cardiopathy; 62 per cent. of the cases occurred among men between 20 and 25, and 14 per cent. occurred among men between 32 and 34. Among soldiers between 20 and 22 years of age, rheumatism resulted in cardiopathy in 40 per cent. of the cases; between 23 and 30, in 25 per cent., and among older men, in 13 per cent. On an average of from five to six weeks after dismissal from the hospital these cases were checked up, with the following results: Out of seventeen cases of mitral endocarditis, eight gave normal sounds; nine showed some signs of mitral disease. Among nine cases of aortic endocarditis, five gave normal sounds, three gave harsh or clangorous sounds, and one showed the murmur of aortic insufficiency. Often cardiomalacia existed. Signs of pericarditis had disappeared in all cases. In about half the cases, the patients seemed cured; the others still showed signs of endocarditis.

#### UTILIZATION OF WOMEN'S SERVICES IN THE MANUFACTURE OF DENTAL SUPPLIES FOR THE MILITARY HEALTH SERVICE

Owing to the scarcity of male workmen and the necessity to provide prostheses as quickly as possible for soldiers accidentally edentated, the undersecretary of state of the military health service has drawn the attention of those in charge of this special phase of the service to the employment of women who have already rendered valuable aid in other departments. It was possible to entrust to women, after a period of apprenticeship lasting from ten to twenty days, many phases of the manufacture of prosthetic dental apparatus, such as the casting of plaster models and the making of dental modeling wax, registering teeth, filling casts, finishing and polishing. From experience it may be affirmed that a dental laboratory worker, assisted by two well trained women, can double his output of apparatus.

### Necessity of Publishing the Composition of Pharmaceutical Specialties

Dr. Tiffeneau, associate professor at the Faculté de médecine de Paris, has drawn the attention of the Société de médecine légale to the fact that most manufacturers fail to publish the qualitative and quantitative composition of their products. The employment of these specialties constitutes a return to empiricism and, moreover, these products escape the control of the service for the repression of frauds. After discussion, the société ruled that the composition of these products be declared to a service or bureau designated by the public authorities before they are placed on sale.

### Election of Two Foreign Associates to the Academy of Medicine

At a recent session, the Académie de médecine elected two foreign associates, Drs. Francisco Durante, professor of clinical surgery at the Faculté de médecine de Rome, and Simon Flexner, of the Rockefeller Institute, New York.

### Personal

Dr. Ferdinand Widal, professor of internal pathology at the Faculté de médecine de Paris, has been called to take the place of the late Professor Bouchard in the superior council of public instruction.

## Marriages

JAMES ROY FREELAND, M.D., Pittsburgh, to Miss Katherine Palmer Moore of New York City, December 28.

SYLVESTER GUY PAKE, M.D., Superior, Wis., to Miss Rhea Janet McManus of Duluth, Minn., December 19.

FREDERICK LEONARD MCDANIEL, M.D., to Miss Sue McCloskey, both of Osawatomie, Kan., January 15.

JOHN HENRY TRABAND, JR., M.D., to Miss Laura Adelaide Hempel, both of Baltimore, January 9.

JAMES CLYDE SARGENT, M.D., to Miss Mary Genevieve Cook, both of Minneapolis, January 3.

WILLIAM A. HALL, M.D., Prairie du Chien, Wis., to Miss Lydia Hulse of St. Paul, January 4.

JULIUS T. KANE, M.D., Jamaica, N. Y., to Miss Margery L. Davis of Montreal, Que., January 6.

RUSSELL ARTHUR JEWITT, M.D., Cleveland, to Miss Kate Freund of Chicago, January 10.

EDWARD ESTILL JOHNSTON, M.D., to Miss Mary L. White, both of Indianapolis, January 3.

DABNEY B. REINHART, M.D., Merrill, Wis., to Miss Ann Toomey of Chicago, January 1.

HARRY EDGAR DEES, M.D., Bicknell, Ind., to Miss Naomi Robertine Cox, January 11.

WILLIAM JOFFEE, M.D., to Miss Freda Abelson, both of Chicago, January 14.

# Deaths

**Charles Francis Withington, M.D.,** Boston; Harvard Medical School, 1881; aged 64; a Fellow of the American Medical Association, and at one time a member of the committee on national legislation; president in 1914 and 1915 of the Massachusetts Medical Society; visiting physician to the Boston City Hospital and a member of the consulting staff of the Boston Insane Hospital, Choate Memorial Hospital, Woburn, Mass., and the New England Hospital for Women and Children; a member of the Association of American Physicians; formerly instructor in clinical medicine in his alma mater and later lecturer of medicine in the Graduate School of Medicine in Harvard University; for several years associate editor of the *Boston Medical and Surgical Journal;* died at his home, January 7, from heart disease.

**Charles Norman Ellinwood, M.D.,** San Francisco; Rush Medical College, 1858; aged 80; a Fellow of the American Medical Association; formerly surgeon to the San Francisco City and County Hospital; president and professor of physiology and clinical surgery in Cooper Medical College; surgeon of the Seventy-Fourth Illinois Infantry, U. S. Volunteers, and surgeon major in the army during the Civil War; for many years a surgeon in the United States Marine Hospital Service and one of the organizers of the United States Public Health Service; a member of the board of regents of the University of California, and surgeon in chief to the San Francisco and German hospitals; died at his home, January 4, from senile debility.

**Chauncey D. Palmer, M.D.,** Cincinnati; Medical College of Ohio, Cincinnati, 1862; aged 77; a member of the Ohio State Medical Association; assistant surgeon at Camp Dennison, Ohio, from 1862 to 1865; professor of obstetrics and gynecology in his alma mater from 1869 to 1875; professor of gynecology and clinical gynecology from 1875 to 1906, and emeritus professor of obstetrics, gynecology and clinical gynecology since 1906; clinician in obstetrics and gynecology at the Cincinnati Hospital, from 1883 to 1906; consulting gynecologist to the Presbyterian and Good Samaritan hospitals, Cincinnati; contributor to many textbooks on obstetrics and gynecology; died at his home in Avondale, Cincinnati, January 10.

**Aaron J. Steele, M.D.,** St. Louis; Jefferson Medical College, 1859; aged 81; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association, and American Orthopedic Association; professor of orthopedic surgery in Washington University; orthopedic surgeon to the Missouri Baptist Sanitarium and consulting orthopedic surgeon to the Martha Parsons Children's Hospital, St. Louis; a veteran of the Civil War; died at his home, January 7.

**John Arthur Cullum, M.D.,** Regina, Sask.; University of Toronto, Ont., 1905; L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.&S. (Glas.), 1906; aged 38; captain in the Canadian Army Medical Corps; who on account of gallantry had been recommended for the Victoria Cross, and had been awarded the Military Cross and the *Croix de Guerre;* died November 10, from wounds received while on active service with the Canadian expeditionary force on the western war front in France.

**Pitt Yandell McCoy, M.D.,** Evansville, Ind.; Rush Medical College, 1863; aged 75; a Fellow of the American Medical Association, and a delegate from Kentucky to the Association at its meeting in St. Louis in 1873; formerly professor of surgery in Evansville Medical College; president of the staff of St. Mary's Hospital, and for thirty-five years division surgeon for the Louisville and Nashville System; died at his home, January 14, from heart disease.

**George Albert Ickes, M.D.,** Altoona, Pa.; Jefferson Medical College, 1886; aged 61; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; for many years a member of the city council, and president of that body in 1901; at one time coroner of Perry County; died in the Altoona Hospital, January 9, from pneumonia superinduced by a fall, December 31.

**W. Franklin Coleman, M.D.,** Chicago; Queens University, Kingston, Ont., 1863; M.R.C.S. (Eng.), 1870; aged 79; formerly a Fellow of the American Medical Association; one of the founders and president of, and professor of ophthalmology in the Post-Graduate Medical School of Chicago; well known as a specialist in diseases of the eye, ear, nose and throat; died in Hastings, Fla., January 22.

**Alfred Myers, M.D.,** York, Pa.; Jefferson Medical College, 1875; aged 62; a member of the Medical Society of the State of Pennsylvania; postmaster of Hampton, Pa., during the administration of President Benjamin Harrison; died in his laboratory, January 5, from cerebral hemorrhage. The York County Medical Society held a special meeting, January 6, to take action on the death of Dr. Myers.

**Eugene Boyd Campbell, M.D.,** Williamsport, Pa.; Jefferson Medical College, 1873; aged 66; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; for several years physisian to the Williamsport City Hospital, and for four years president and for four years secretary of the hospital board; died at his home, January 6.

**Albert A. Seem, M.D.,** Bangor, Pa.; Jefferson Medical College, 1865; aged 73; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; surgeon of U. S. Volunteers during the Civil War; chief burgess of Bangor; a member of the borough council and school board and for several years president of the Bangor Trust Company; died in Los Angeles, January 5.

**Seth Louis Lloyd,** Williamstown, Mass. (license, Massachusetts, years of practice, 1894); aged 51; for several terms a member of the board of selectmen and school committee of Williamstown and later a member of the board of commissioners of Berkshire County; superintendent of the Sand Springs Sanatorium; died at his home, January 7.

**Charles Richard Charteris, M.D.,** Chatham, Ont.; University of the Victoria College, Coburg, Ont., 1887; aged 51; a member of the Ontario Health Association; acting medical officer of health of Chatham and Chatham Township; past president of the Chatham, Ont., public library board; died at his home, November 25, from angina pectoris.

**Henry August Kornemann, M.D.,** Newark, N. J.; College of Physicians and Surgeons in the City of New York, 1872; aged 83; a Fellow of the American Medical Association and a member of the American Public Health Association; for many years a member of the staff of the German Hospital, New York; died at his home, January 8.

**Stephen Olney, M.D.,** Sioux Rapids, S. D.; Western Reserve University, Cleveland, 1868; aged 70; formerly a member of the South Dakota State Medical Association; a practitioner of Sioux Falls, from 1877 until his retirement in 1911; died at his apartment in the Hotel Kaiserhof, Sioux Falls, January 6, from acute dilatation of the heart.

**Harry Burdell Sanford, M.D.,** Memphis, Tenn.; Memphis (Tenn.) Hospital Medical College, 1896; aged 40; formerly a member of the Tennessee State Medical Association, Mississippi Valley Medical Association and Tri-State Medical Association of Mississippi, Arkansas and Tennessee; died at his home, January 8, from tuberculosis.

**Clinton G. Gray, M.D.,** Ironton, Ohio; Miami Medical College, Cincinnati, 1871; aged 71; formerly a member of the Ohio State Medical Association; a veteran of the Civil War; for nineteen years proprietor of Gray Gables Sanatorium, Hanging Rock; died in the Ohio State Hospital, Dayton, January 4.

**Thomas B. Taylor, M.D.,** St. Louis; Washington University, St. Louis, 1876; aged 67; a member of the Missouri State Medical Association; formerly surgeon to the Mississippi River and Bonne Terre Railway at Festus, Mo., and coroner of Jefferson County; died in the Masonic Hospital, St. Louis, January 9.

**Lester Elmer Peck, M.D.,** Buchanan, Mich.; University of Michigan, Homeopathic Medical School, Ann Arbor, 1894; aged 46; health officer for several years; a member of the village council for four years and president for three terms; died at his home, December 30, from carcinoma of the stomach.

**Henry Laning, M.D.,** Chevy Chase, Md.; Albany (N. Y.) Medical College, 1864; aged 73; who had spent the greater part of his life since 1873 in Osaka, Japan, where he was for forty years head of St. Barnabas' Hospital; died at the home of his son in Chevy Chase, January 1, from cerebral hemorrhage.

**Frank Rattan, M.D.,** Martinez, Calif.; Cooper Medical College, San Francisco, 1885; aged 59; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; died at his home, January 3.

**Ambrose Jones, M.D.,** Delton, Wis.; Rush Medical College, 1849; aged 96; a pioneer in telegraphy, who sent the first message between Milwaukee and Chicago on Jan. 15, 1848; assistant surgeon of the Fifth Wisconsin Volunteer Infantry during the Civil War; died at his home, January 11.

**James H. Hedgpeth, M.D.,** Rockport, Mo.; College of Physicians and Surgeons, St. Joseph, Mo., 1882; aged 61; for several years coroner of Atchison County, Mo., and for eight years general manager of the Rockport, Langdon and Northern Railroad; died at his home, about January 5.

**James Logan Brown,** Pleasant Unity, Pa. (license, twenty years' practice, 1881; Westmoreland County, Pa.); aged 72; formerly a member of the Medical Society of the State of Pennsylvania, and for forty-five years a practitioner of Pleasant Unity; died at his home, January 13.

**John H. Williams, M.D.,** Summerfield, Ohio; Columbus (Ohio) Medical College, 1885; aged 60; a member of the Ohio State Medical Association; after a violent quarrel with his wife, January 5, shot and killed her, and afterward shot himself, dying from his injuries, January 6.

**Samuel Watson McConochie, M.D.,** Hamilton, Ont.; Trinity Medical College, Toronto, 1883; L.R.C.P. (Lond.), 1884; aged 60; died in the City Hospital, Hamilton, October 11, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent.

**Noble Theodore Jerman, M.D.,** Holmesburg, Philadelphia; Hahnemann Medical College, Philadelphia, 1873; aged 66; formerly a member of the school board and founder and president of the Holmesburg Improvement Association; died at his home, January 8.

**David Chancellor Boyce, M.D.,** Pittsburgh; University of Pennsylvania, Philadelphia, 1892; aged 49; a Fellow of the American Medical Association; surgeon of the Northwest division of the Pennsylvania Lines; died at his home, January 12, from pneumonia.

**James T. Warren, M.D.,** Sprague, Mo.; Washington University, St. Louis, 1871; Jefferson Medical College, 1882; aged 69; a pioneer practitioner of Bates County, Mo.; died at the home of his daughter in Minneapolis, Kan., November 19, from arteriosclerosis.

**George Albert Steele, M.D.,** Havana, N. D.; Rush Medical College, 1895; aged 44; formerly a Fellow of the American Medical Association; local surgeon of the Great Northern System; died on a train near Colorado Springs, January 10, from tuberculosis.

**Thomas William Fingland Macknight, M.D.,** Tamworth, Ont.; Queens University, Kingston, Ont., 1913; aged 29; a Canadian medical volunteer officer on duty with the Royal Army Medical Corps in India; died in Bombay, September 4, from pyrexia.

**Samuel Rideout Glover, M.D.,** Midway Mills, Va.; Medical College of Virginia, Richmond, 1907; aged 47; a member of the Medical Society of Virginia; died in the Stuart Circle Hospital, Richmond, December 5, from pernicious malaria.

**Ellsworth Smith Adams, M.D.,** Beverly, N. J.; Jefferson Medical College, 1890; aged 42; formerly a member of the Medical Society of the State of New Jersey, and mayor of Beverly; died at his home, January 5, from heart disease.

**Hannibal Landon, M.D.,** Remington, Ind.; Starling Medical College, Columbus, Ohio, 1865; Jefferson Medical College, 1866; aged 75; for forty years a practitioner of Jasper County, Ind.; died at his home, January 6, from asthma.

**Clarence M. Kuykendal, M.D.,** Rock Hill, S. C.; University of Maryland, Baltimore, 1890; aged 48; who retired from practice several years ago to take charge of the Kuykendal Drug Company; died in Rock Hill, January 5.

**Louis Watson Raison, M.D.,** Altoona, Pa.; Medical College of Ohio, Cincinnati, 1884; aged 63; for several years surgeon for the Baltimore and Ohio System, at Foxburg, Pa.; died at his home, January 5, from bronchopneumonia.

**Herbert Hallet Marsh, M.D.,** Chillicothe, Ohio; Ohio Medical University, Columbus, 1896; aged 46; formerly a Fellow of the American Medical Association; died at his home, December 25, from pneumonia.

**Elmer A. Clarke, M.D.,** Los Angeles; Homeopathic Hospital College, Cleveland, 1878; aged 68; a member of the board of health of Los Angeles in 1909; died at his home, December 31, from pneumonia.

**Clinton E. Sapp, M.D.,** South Omaha, Neb.; Medical College of Ohio, Cincinnati, 1875; aged 64; formerly a Fellow of the American Medical Association; died at his home, October 11, from chronic nephritis.

**Wyman H. Fisher, M.D.,** Wanatah, Ind.; Northwestern University Medical School, Chicago, 1880; aged 72; for forty years a practitioner of Laporte County, Ind.; died at his home, January 5, from nephritis.

**John Adams Winters, M.D.,** LaCrosse, Wis.; Bellevue Hospital Medical College, 1883; aged 60; was found dead from heart disease in his office in the State Bank Building, LaCrosse, January 2.

**Thomas George Rainey, M.D.,** Cleveland; University of Michigan, Ann Arbor, 1872; aged 71; died at his home, December 20, from injuries received in an automobile accident in September last.

**Henry D. Fulton, M.D.,** Pittsburgh; Jefferson Medical College, 1883; aged 57; a member of the Medical Society of the State of Pennsylvania; died at his home, December 27, from pneumonia.

**John Locke Hardeman, M.D.,** Portersville, Calif.; Washington University, St. Louis, 1878; aged 61; a pioneer orange grower of the Portersville district; died at his home, December 24, from valvular heart disease.

**John Patrick Moore, M.D.,** Long Island City, N. Y.; University of Vermont, Burlington, 1894; aged 50; died at his home in Astoria, Long Island City, October 24, from uremia.

**George A. Anderton, M.D.,** Greystone Park, N. J.; Baltimore Medical College, 1907; aged 35; assistant physician at the Morris Plains (N. J.) State Hospital; died, January 2.

**Granville W. Traylor, M.D.,** McCune, Kan.; Kansas City (Mo.) Medical College, 1901; aged 39; a member of the Kansas Medical Society; died at his home, January 1.

**James Willard Avery, M.D.,** Delaware, Ohio; Miami Medical College, Cincinnati, 1883; aged 58; died at the home of his sister in Delaware, December 31, from carcinoma.

**Henry A. Lounsbury, M.D.,** Detroit; Detroit College of Medicine and Surgery, 1888; aged 53; died in the Receiving Hospital, Detroit, December 29, from pneumonia.

**Oscar Jerome Shepardson,** Chester, Mass. (license, Massachusetts, years of practice, 1894); aged 65; died in the Springfield Hospital, November 24, from brain tumor.

**John W. Koelle, M.D.,** Jamestown, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1896; aged 47; died at his home, December 23, from pneumonia.

**Nathan F. Canaday, M.D.,** Hagerstown, Ind.; Homeopathic Hospital College, Cleveland, 1870; aged 72; died at the home of his son, in Newcastle, Ind., January 5.

**W. F. Rogers,** Porterville, Miss. (license, Mississippi); aged 62; a trustee of the Matty Herse Hospital; died at his home, December 11, from pneumonia.

**James Harmer Rile, M.D.,** Wilmington, Del.; Hahnemann Medical College, Philadelphia, 1879; aged 59; died at his home, January 2, from pneumonia.

**N. Herbert Haight, M.D.,** Sacramento, Calif.; Hahnemann Medical College, Chicago, 1890; aged 53; died at his home, December 29, from heart disease.

**George F. Smith, M.D.,** Carthage, Mo.; Louisville (Ky.) Medical College, 1871; aged 68; died in Nevada, Mo., December 8, from cerebral hemorrhage.

**Amos Lewis Sweet, M.D.,** Geneva, N. Y.; New York University, New York, 1866; aged 73; died at the home of his son in New York, January 1.

**Joseph J. Andzulatis, M.D.,** New Britain, Conn.; College of Physicians and Surgeons, Baltimore, 1894; aged 51; died at his home, December 29.

**Peter S. Weidman, M.D.,** Edwardsville, Ill.; Albany (N. Y.) Medical College, 1855; aged 90; died in the Jacksonville State Hospital, January 3.

**George W. Irick, M.D.,** Sheridan, Ark.; Physio-Medical College of Indiana, Indianapolis, 1890; aged 66; died at his home, December 21.

**Bernard H. Walker, M.D.,** Norfolk, Va.; Jefferson Medical College, 1849; aged 91; died at the home of his son in Norfolk, Va., January 1.

**Erasmus D. Hall, M.D.,** Knowlesville, N. Y.; Castleton (Vt.) Medical College, 1853; aged 85; died at his home, December 9.

**George T. West,** Bancroft, Iowa (license, years of practice, Iowa, 1866); aged 69; died at his home, December 11, from pleurisy.

**Robert Thomson, M.D.,** Troy, N. Y.; Albany (N. Y.) Medical College, 1871; aged 70; died at his home, December 24.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

## NORTH CAROLINA TO THE FORE

### The New Governor Backs Up the State Board of Health in Its Fight on Fraudulent Nostrums

Conservation of the public health and protection against the menace of the fraudulent "patent medicine" business bid fair to be accomplished facts in North Carolina. The Board of Health of that state has for some time distinguished itself as being progressive in its attitude and aggressive in its methods. The Old North State now has the additional advantage of having in its governor's chair a man who realizes how great an asset to the commonwealth is the health of the people. Thomas Walter Bickett, a distinguished lawyer and the son of a country doctor, was, on Jan. 11, 1917, inducted into a four years' term as governor of North Carolina. Governor Bickett in his inaugural address displayed a conception of the work of modern medicine that it as gratifying as it is encouraging. His remarks relative to the State Board of Health and the efforts of the medical profession indicated an intimacy with the ideals of scientific medicine, preventive and curative. Especially interesting were Governor Bickett's remarks on the problem of fraudulent nostrums. To quote from a newspaper report of the address:

"The State Board of Health deserves the unqualified support of the general assembly in its campaign against quacks and quackery. The law requires a man to have a diploma from a first class medical college, and to stand a rigid examination before the North Carolina Board of Medical Examiners before he is allowed to write a single prescription for a patient in North Carolina. And yet we permit the sale of nostrums to our people without any adequate knowledge of whether or not they are injurious to health, or have any medicinal value whatever.

"I am in favor of a law making it a felony for any man to sell, offer for sale or advertise for sale in North Carolina any proprietary or patent medicine purporting to cure cancer, consumption, diabetes, paralysis, epilepsy, Bright's disease, or any other disease for which the North Carolina Medical Association and the American Medical Association declare that no cure has been discovered.

"I am earnestly in favor of a law requiring all vendors of proprietary medicine to file with the State Board of Health a statement showing the exact composition of such medicines and that the State Board be empowered to forbid the sale of such proprietary medicines in the state of North Carolina, if in its opinion it is without curative value in the treatment of the disease it purports to cure.

"A bill is being prepared by our health department that will deal fully and adequately with this subject, and I give to this bill my most emphatic endorsement."

Governor Bickett's statement that he favors a law that will permit the people of North Carolina to know what they are taking when they prescribe for themselves, is in line with the attitude already taken by the North Carolina State Board of Health. That board devoted its January, 1917, *Health Bulletin* to a discussion of "The 'Patent Medicine' Business or, Accurately Speaking, The Secret Remedy Business." This twenty-four page pamphlet contains so much of interest that it should be put into the hands of every citizen of North Carolina.[1] On the cover a parallel is drawn—we reproduce it on this page—between the North Carolina requirements for the sale, respectively, of fertilizers and "patent medicines." The Board of Health calls attention to the distinction between patented medicines and what are colloquially known as "patent medicines." It emphasizes the fact that a patented medicine is an open formula medicine, a product that is non-secret, while the "patent medicines" are almost invariably secret in composition and depend for their popularity on the mystery which this secrecy permits and encourages. The work of the "Select Committee on Patent Medicines" in Great Britain is summarized and some interesting extracts from the committee's report are published in detail. A chapter on "Tricks of the Trade" discusses such tricks as "The Story of Extraordinary Origin of an Ordinary Prescription," "The Aliases of Secret Remedy Venders," "The Cooperative Mailing List," "Blackmail in the Purchase of Abortion-Producing Remedies," and others.

In discussing the problem of the responsibility of newspapers for some of the evils of the "patent medicine" business, the Board of Health emphasizes the fact that abolishing secrecy will result in protecting the press. The chapter on the "Explanation of Public Confidence in the Secret Remedy" is thought-provoking and will give the layman some new viewpoints. The psychology of advertising, the deep seated superstitions, especially of the ignorant, which are played on through the secret and therefore mysterious nostrum, the tendency of human nature to confuse a sequence of events with cause and effect and, finally, the physiologic action of the powerful drugs that are to be found in some nostrums are all discussed in explaining why secret remedies are used to such an enormous extent.

In closing, the North Carolina State Board of Health calls attention to the fact that a law requiring the "patent medicine" manufacturer to put the names and quantities of the active ingredients of his product on the label will not spell the ruin that the "patent medicine" fraternity has declared, unless, indeed, the products are worthless and fraudulent. The *Health Bulletin* specifically mentions the case of the manufacturers of "Ayer's Sarsaparilla," etc., who for years have published a complete quantitative and qualitative formula on the labels of their products.

If the bill which is being prepared by the North Carolina State Board of Health requires that all "patent medicines" sold in North Carolina shall bear on their labels the names and amounts of their active ingredients there will be an interesting fight. The "patent medicine" interests may be counted on to oppose such a bill tooth and nail for reasons that we have repeatedly stated, viz., that the bulk of the "patent medicine" business is inherently fraudulent and cannot stand the light of publicity. If such a bill finally passes, North Carolina will have achieved the notable distinction of being the first state in the Union adequately to protect its citizens against the fraudulent nostrum business. New York City and the state of Louisiana have both attempted similar legislation, the

## A BAG OF FERTILIZER and A BOTTLE OF DOPE

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| One is for a plant. | The other, for a child. |
| One is required by law to print its ingredients on the package. | The other is not required to disclose its ingredients. |
| One can be used intelligently, in accordance with scientific knowledge regarding the effects of the substances on plants. | The other cannot be used intelligently, in accordance with scientific knowledge regarding the effects of the substances on human beings. |
| One thrives upon openness and public intelligence. | The other thrives upon secrecy and public ignorance. |
| One defrauds with difficulty. | The other defrauds with ease. |
| For the one, the Government, knowing its composition, can furnish the consumer exact information as to its effects. | For the other, the Government, not knowing its composition, cannot furnish the consumer any statement regarding its effects. |

IS IT JUST AND RIGHT THAT THE FARMER MAY KNOW WHAT HE GIVES HIS PLANTS, AND UNJUST AND WRONG TO ALLOW THE PARENT TO KNOW WHAT HE GIVES HIS CHILD?

North Carolina in its January *Health Bulletin* presents the interesting parallel, given above, between the requirements in that state for selling fertilizers and "patent medicines," respectively.

1. The Bulletin will be sent free to any citizen of the state on request. Address Dr. W. S. Rankin, Secretary State Board of Health, Raleigh, N. C.

former through its commissioner of health; the latter through the state board of health. The New York ordinance, while enacted more than a year ago, has been rendered practically inoperative by the legal fight made by the "patent medicine" interests on it. The ruling of the Louisiana Board of Health, apparently, never passed the academic stage.

## PIL. CASCARA COMPOUND-ROBINS

### Report of the Council on Pharmacy and Chemistry

A circular issued by the A. H. Robins Company of Richmond, Va., contains the following statement:

"PIL. CASCARA COMPOUND-ROBINS is a rational therapeutic formula, composed of CASCARA, PODOPHYLLIN, COLOCYNTH and HYOSCYAMUS, which promotes a natural flow of secretions, which is, in turn, the physiologic stimulant of peristalsis. Thus, a normal evacuation is produced without subsequent inhibition.

"They contain no Mercury, Strychnia nor Belladonna.

"An ideal aid to any remedial agent, when a Mild, Medium or Strong alimentary stimulant is needed [*sic*].

"Made in two strengths, the dosage may be easily regulated so as to obtain the effects of an Anti-Dyspeptic, Aperient, Laxative or Cathartic, as desired. They never cause discomfort unless given in larger dose than needed."

This preparation is another example of the innumerable mixtures of well-known drugs having nothing in the way of originality or of special therapeutic value to recommend them.

The advertising implies that this particular combination has a special action on the secretions of the gastro-intestinal tract; otherwise it would be hard to explain the claim that the preparation is antidyspeptic, if that means anything more than a laxative or cathartic.

The claim is made that this preparation contains no belladonna—yet it admittedly contains hyoscyamus! This manifests either ignorance on the part of the manufacturers, or an effort to impose on the medical profession. Both belladonna and hyoscyamus contain variable amounts of similar alkaloids, chiefly hyoscyamin. Hyoscyamus is feebler than belladonna in its action, as it contains less alkaloid. The qualitative differences between the two drugs, with reference to their use as laxatives, is so slight as to make the company's claim for hyoscyamus appear either deliberately misleading or to be the result of crass ignorance. Promoting this mixture of well-known laxatives and cathartics as an "ideal aid to any remedial agent when a mild, medium or strong alimentary stimulant is needed" is a slur on the intelligence of physicians.

Pil. Cascara Compound-Robins is not acceptable for New and Nonofficial Remedies.

EDITORIAL NOTE.—Advertisements of "Pil. Cascara Comp.-Robins" appeared in the following medical journals during 1916:

*American Journal of Surgery*
*Maryland Medical Journal*
*Charlotte Medical Journal*
*Medical Council*
*Southern Practitioner*
*Virginia Medical Semi-Monthly*
*Texas Medical Journal*
*Medical Herald*
*Medical Brief*

## CASTA-FLORA

### Report of the Council on Pharmacy and Chemistry

Casta-Flora is one of those complex preparations which are offered to the medical profession, with plausible arguments in support of the claims made. It is put out by the Wm. S. Merrell Chemical Co., Cincinnati. Each fluidounce is said to represent:

"Castanea, fresh leaves, 40 gr.; Passiflora, fresh plant, 40 gr.; Gelsemium, green tincture, 8 minims; Inula, represented by the camphoraceous stearoptene Helenin, 20 grs.; Iodized Lime, 8 grs.; Menthol, 1-4 gr.; Aromatic Syrup Yerba Santa, 60 minims."

It is said to be:

"A new combination of well-tried remedies of especial value in pertussis and other spasmodic coughs. It is composed of astringent, antispasmodic, sedative and expectorant agents, that control the paroxysms, relieve the irritation, promote expectoration, and give tone to mucous membranes involved."

Still more exaggerated claims are made for the individual constituents of Casta-Flora, partly by direct statement, partly by inference. For example:

"Castanea is almost a specific in whooping cough and other spasmodic coughs.

"Passiflora is a narcotic, sedative and antispasmodic without habit-forming properties, nor does it lock up the secretions and upset digestion like opiates.

"Inula (elecampane) has been employed as a cough remedy in England for centuries. Its action is similar to guaiacol and creosote. Its active principle, helenin, is destructive of tubercle bacilli in dilutions of 1 to 10,000.

"Iodized Lime, Menthol, and Yerba Santa are 400 well known as expectorants and antiseptics to require more than passing mention."

That Casta-Flora is a "new" combination may be admitted; it is improbable that exactly this combination of obsolete drugs was ever before selected for any purpose whatever, but the statement is misleading in that no new principle of therapeutics is involved. On the contrary, the combination is just what might be expected from haphazard choosing of discarded and nearly forgotten drugs. It seems incredible that a reputable firm of manufacturing pharmacists would make the positive statement that castanea is *almost* a specific in whooping cough. Why not say it is a specific? It would be about as true. A specific or "almost specific" for this disease would rank among great medical discoveries; but castanea is merely a slightly astringent drug neither better nor worse than scores of other astringent drugs that have been tried, found valueless and discarded.

Hardly less surprising are the statements regarding passiflora. This herb has been on the market about three quarters of a century. Not only has it never established itself in scientific medicine, but it is not even mentioned in modern standard works on therapeutics.

Of all the statements made in the circular perhaps the most remarkable, in that it is so dangerously misleading, is that regarding helenin, the active principle of elecampane. The statement that this principle (helenin) is destructive of tubercle bacilli in dilutions of 1-10,000 can only mean that it is of extraordinary value in the treatment of tuberculosis; in fact, it is definitely stated that the action of elecampane is similar to that of guaiacol and creosote.

It is obvious that any drug which would destroy the tubercle bacilli in the human lungs without exerting a toxic action on the patient would be a great contribution to medicine. But although elecampane may have been used for centuries it has proved to have little, if any, merit, and even the National Standard Dispensatory, p. 848, says: "Elecampane was formerly employed as a tonic, stimulant, diuretic, diaphoretic, expectorant, and emmenagogue, but has now largely fallen into disuse." One looks in vain in the standard textbooks on therapeutics for a description of the uses of inula (or elecampane), and of its so-called "active principle," helenin.

The circular to which reference has been made says, referring to the use of castanea and passiflora in the treatment of whooping cough:

"Gelsemium, when made from the fresh, green plant—as is Merrell's—is an excellent adjuvant to the above drugs, and allays the nervous irritability so frequently present."

H. C. Wood, Jr. (Pharmacology and Therapeutics, 1916, p. 160), says of gelsemium: "Gelsemium was originally employed as an arterial sedative and febrifuge in the malarial fevers of the South, and subsequently in sthenic fevers. It appears in some way to depress the bodily temperature, but it does not appear probable that any advantage to be derived from it will counterbalance the danger attending its employment in the large doses required. In asthma, spasmodic laryngitis, whooping cough, and nervous cough it has been recommended by Bartholow, but is little used."

That is about as favorable a statement for the drug as is to be found in the textbooks, and it serves to illustrate how little new there is in this mixture of obsolete drugs that Merrell seeks to market as one possessing extraordinary therapeutic value.

Even though the ingredients, or certain of them, were singly useful in the treatment of those conditions for which Casta-Flora is recommended, no one could possibly foresee the effect in any given case of such a jumble of drugs, both active and inert, as is said to be represented in this preparation. The prescribing of such mixtures, the action of which cannot in any way be foreseen, is plain charlatanism.

In addition, the various drugs in Casta-Flora are present in such proportions that the dose of each of the several ingredients bears no relation to the commonly accepted dose.

Casta-Flora is not acceptable for New and Nonofficial Remedies.

Editorial Note.—Advertisements of "Casta-Flora" appeared in the following medical journals during 1916:

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|---|---|
| *Medical Record* | *Lancet-Clinic* |
| *New York Medical Journal* | *Medical Summary* |

## Correspondence

### A Standard Size for Medical Books

*To the Editor:*—I am writing to make a suggestion in regard to the size of medical books. The first thing one notices on going into a lawyer's office is the uniform size of the books on his shelves. The first thing one notices on going into a physician's office is the jumbled up appearance of his books, owing to the fact that nearly all of them are of different heights and widths. I believe that the American Medical Association should take the lead and start a movement to have a standard established for the height and width of all medical books. They should be of one height and width, but may be thick or thin as necessary. This would give us a library which would make a decent appearance and would save our friends the bother of asking us, after looking at our books, whether we are moving in or moving out.

John D. Pollard, M.D., Chicago.

### Yellow Petrolatum—Vesicorectal Reflex—The Treatment of Intestinal Stasis

*To the Editor:*—To those who believe, as I do, that some form of lubrication of the large intestine is desirable in the treatment of autointoxication from intestinal stasis, let me recommend common yellow petrolatum in place of oil injections or of liquid petrolatum by the mouth. From 1 to 4 heaping teaspoonfuls a day, by mouth, will generally produce soft or semiliquid stools without the least griping. It is decidedly more efficacious than the liquid petrolatum, which frequently passes right by fecal masses without mixing with them or causing their expulsion; while the yellow petrolatum mixes thoroughly with the bowel contents and is never expelled by itself. This also makes it a much more decent form of treatment than that by liquid petrolatum, which often causes a most disagreeable leakage. The yellow petrolatum has somewhat of the latter advantage over the oil injections, to say nothing of what it saves in fuss and expense. An oil enema is so elaborately disagreeable a function that I often wonder how many of the men who light-heartedly order their patients to inject half a pint of olive oil every night for a year or so have ever tried it themselves. As to the expense, a 5 pound can of the yellow petrolatum retails for a dollar, and this will last from two to three times as long as a gallon of cottonseed oil, costing about twice as much; or if olive oil is used, from three and a half to four times as much. The white petrolatum costs more than the yellow and is, I believe, less efficacious. The yellow is practically tasteless, and if approached without prejudice is really a rather pleasant dose. If so preferred, it can be taken in any hot liquid. The dose necessary at first can generally be reduced by half after a week or so.

Another aid in the treatment of constipation is the vesicorectal reflex. Some years ago I noticed that if, perforce, micturition had to be postponed until the desire was acute, the bowel often would also move if the opportunity were given it; and by making systematic use of this reflex I was able, after having been a slave of the pill for twenty years, to go without any laxative whatever. This reflex accounts for the efficacy of drinking a pint of water at bedtime. The common supposition seems to be that some of the water passes clear through and irrigates the colon from above; but this seems highly improbable. What the water does do is so to distend the bladder that the bowel is stimulated to unwonted activity. I think the same reflex even without the water drinking at night is one of the factors in the normal morning movement of the bowels. In practice, the best method of using it is to take 2 or 3 glassfuls of water at bedtime. Then on arising, instead of urinating at once, wait until the desire is quite strong when, if the attempt is made, the bladder and the bowels can generally be emptied together. So far as I can learn, physicians and physiologists have paid little or no attention to the vesicorectal reflex, but it certainly exists and can be utilized in the treatment of constipation, either by itself or in connection with other measures.

Harold Gifford, M.D., Omaha.

### Request for Report of Results of Percy Method in Treatment of Uterine Carcinoma

*To the Editor:*—I am anxious to get reports from surgeons who have had experience with the Percy heat coagulation method in the treatment of inoperable uterine carcinoma. I expect to report my results in the use of this technic before the section on Obstetrics, Gynecology and Abdominal Surgery at the New York session of the American Medical Association. I shall be pleased to furnish blanks which cover the form of inquiry that I consider important in order to learn the true value of this treatment in uterine carcinoma. I shall highly appreciate any information that may be given me along the lines of this investigation.

J. F. Percy, M.D., 147 South Cherry Street, Galesburg, Ill.

## Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### THE RELIEF OF CONSTIPATION

*To the Editor:*—In Queries and Minor Notes, please enlighten me on the following questions:

1. What is the best laxative to be taken continually by tuberculous patients who are confined most of the time in bed, when proper dieting does not seem to give a satisfactory evacuation each day?
2. Is it not better to give a laxative to most tuberculous bed patients as a routine than to run the risk of toxic symptoms of constipation and the chance of rectal troubles, as hemorrhoids, fissures and fistulas, which are common in this class of patients and which, when acquired, are hard to get rid of?
3. What is the best laxative in these cases? And should one be given continuously or alternated as, for example, agar for a while, and then liquid petrolatum?
4. I notice that some brands of liquid petrolatum retail for about half the price of others. Is there any difference in quality as to effect?
5. Are any pathologic changes produced from the continuous use of liquid petrolatum for months or years?

Kindly omit name and address. T. R. P.

Answer.—1. There is no "best laxative" to be taken in general by patients with any certain disease. Laxatives, like other drugs, should be given to suit the particular condition of the individual patient.

2. It is impossible to answer such a general question. Again it may be stated that patients must be individualized and not treated by rule.

3. See answers to 1 and 2.

4. There are differences between various brands of liquid petrolatum. The price does not indicate the quality. A brand complying with U. S. P. standards for liquid petrolatum should be used.

5. So far as known, no pathologic changes resulting from the use of liquid petrolatum have been described.

In general it may be said that the aim should be, even with a tuberculous bed patient, unless it is a hopeless case, to relieve constipation by remedial agents other than drugs. Diet is here all important. Cooked and raw fruits, coarse cereals, vegetables, nuts, cream, butter, oil, bran bread, etc., may be of service. Persistence in regulative diet, with attention to details, is imperative. Enemas, such as the oil enema at night, may be helpful. Massage may be beneficial.

The objection to giving a laxative continually is that it induces a habit. This is of course not comparable in its

harmful effects to the morphin or cocain habit, but its ultimate result is apt to be the depriving of the intestine of its power of independent action; the bowels unless urged become more and more sluggish, and the dose must be increased. Besides, there often results an irritable and inflamed intestinal mucosa, the cause of occasional looseness of the bowels, mucus in the stools, abdominal pain—a "cathartic ileocolitis." This really causes much suffering, is provocative of many nervous disturbances, and may even simulate and be treated for such conditions as appendicitis.

So, to repeat, we should advise our correspondent to try by every means not to use a laxative, even a "best laxative," as a routine measure. The relief from the habit of constipation is at the expense of a new habit, that of cathartics with its attendant irritated bowel.

### EFFECT ON ETHER AND CHLOROFORM OF EXPOSURE TO THE AIR

*To the Editor:*—1. Please tell me if ether is rendered unfit for anesthesia if it is allowed to remain in an open can for some time. Does it undergo any chemical change when exposed to the air?

2. Please give me the same information about chloroform.

C. MAYFIELD, M.D., Hutchinson, Kan.

ANSWER.—1. Yes. The U. S. Pharmacopeia requires that ether be preserved in partially filled, well closed containers, in a cool place, remote from fire, and protected from daylight. The U. S. Pharmacopeia further cautions that when ether is to be used for anesthesia, it is to be dispensed only in small, well closed containers, and is not to be used for this purpose if the container has been opened longer than twenty-four hours. Ether is slowly oxidized by the action of air, moisture and sunlight, with the formation of peroxids.

2. The U. S. Pharmacopeia requires that chloroform be preserved in well stoppered bottles, in a cool place, protected from light. Chloroform, which contains alcohol as a preservative, is not readily decomposed by exposure to air. Worth Hale (Variations in the Toxicity of Chloroform for Anesthesia, Annual Reports of the Therapeutic Research Committee of the Council on Pharmacy and Chemistry, 1915, p. 112) studied the toxicity of four commercial brands of anesthetic chloroform, and one sample of anesthetic chloroform which had been standing in the laboratory exposed to the light for at least two years in a half filled white glass bottle. He did not discover any marked difference in the toxicity of the five specimens of chloroform examined.

### LAFAYETTE MIXTURE

*To the Editor:*—What is the composition of Lafayette's mixture, used on the border for the treatment of gonorrhea. A soldier back from the Texan border showed me the prescription.

E. C. CARY, M.D., Reedsville, Wis.

ANSWER.—Lafayette mixture is the alkaline copaiba mixture which had considerable vogue about thirty years ago when gonorrhea was treated in a haphazard way. It has been characterized recently by pharmaceutic authorities as disagreeable, irrational and usually inefficient. The formula is still to be found in the National Formulary under "Mistura Copaibae," with "Lafayette mixture" as a synonym. The formula is:

| | |
|---|---|
| Copaiba | 125 c.c. |
| Spirit of nitrous ether | 125 c.c. |
| Compound tincture of lavender | 125 c.c. |
| Solution of potassium hydroxid | 32 c.c. |
| Syrup | 300 c.c. |
| Mucilage of acacia, a sufficient quantity to make | 1,000 c.c. |

### ACTION OF STRYCHNIN ON BLOOD PRESSURE

*To the Editor:*—What influence, if any, does strychnin exert on blood pressure?

L. W. WRIGHT, M.D., Williamsport, Pa.

ANSWER.—Strychnin in therapeutic doses causes a rise in blood pressure. This is principally due to stimulation of the vasomotor centers, but in part to the increase in tone of the skeletal muscles. Strychnin has little or no action directly on the heart, and the pulse rate is, if anything, slowed. In quantities large enough to cause convulsions, the rise of blood pressure during the latter is enormous. Experiments on animals show that this rise is not entirely due to the convulsion itself, but in part to the effect on the vasomotor center. It is rapidly followed by a fall of pressure from overstimulation and fatigue.

## *Medical Education and State Boards of Registration*

### COMING EXAMINATIONS

ILLINOIS: Chicago, Feb. 21-23. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

IOWA: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.

NEW YORK: New York City, Albany, Syracuse, and Buffalo, Jan. 29-Feb. 2. Chief, Examinations Division, H. H. Horner, University of the State of New York, Albany, N. Y.

VERMONT: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

### Connecticut July Report

Dr. Charles A. Tuttle, secretary of the Connecticut Medical Examining Board, reports the practical and written examination held at New Haven, July 11-12, 1916. The total number of subjects examined in was 7; total number of questions asked 70; percentage required to pass, 75. The total number of candidates examined was 24, of whom 12 passed and 12 failed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| Yale University | (1916) | 82.9, 83.9, | 85.4 |
| Bowdoin Medical School | (1913) | | 79.9 |
| University of Maryland | (1916) | | 75.6 |
| Harvard University | (1915) | | 86 |
| Columbia Univ., Coll. of Phys. and Surgs. | (1913) 78.8; | (1915) | 92.7 |
| Fordham University | (1913) | | 76.4 |
| Jefferson Medical College | (1916) | | 77 |
| McGill University | (1914) | | 77.6 |
| University of Budapest | (1898) | | 78.6* |
| **College** | **FAILED** | | |
| Yale University | (1915) | | 76.4† |
| Eastern University‡ | (1913) | | 58.5 |
| Johns Hopkins University | (1909) | | 75.8† |
| Maryland Medical College | (1913) | | 56.4 |
| University of Maryland | (1916) | | 71 |
| College of Physicians and Surgeons, Boston | (1912) | | 67.5 |
| Harvard University | (1916) | | 77.5† |
| Columbia University, College of Phys. and Surgs. | (1915) 73.6, | | 74.5 |
| Long Island College Hospital | (1916) | | 68.5 |
| Jefferson Medical College | (1912) | | 65.7 |
| University of Vermont | (1910) | | 71.5 |

* Graduation not verified.

† Fell below the required average in one subject.

‡ This college was officially reported as not recognized by the Maryland State Board of Medical Examiners.

### Connecticut Homeopathic November Report

Dr. Edwin C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports that the two following candidates were licensed on presentation of satisfactory credentials, Nov. 14, 1916.

| College | Year Grad. |
|---|---|
| Atlantic Medical College | (1910) |
| New York Homeo. Med. Coll. and Flower Hosp. | (1915) |

### Nevada November Report

Dr. S. L. Lee, secretary of the Nevada State Board of Medical Examiners, reports the written examination held at Carson City, Nov. 6-8, 1916. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, all of whom passed. Eleven candidates were licensed through reciprocity. One candidate was granted a reregistration license by examination. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| College of Medical Evangelists | (1916) | | 83.8 |
| Hahnemann Med. Coll. of the Pacific, San Francisco | (1916) | | 85.6 |
| Leland Stanford Junior University | (1915) | | 88.6 |
| College of Phys. and Surgs. in the City of New York | (1888) | | 85.9 |
| Cornell University | (1903) | | 90.8 |
| McGill University | (1896) | | 86.7 |
| **College** | **LICENSED THROUGH RECIPROCITY** | **Year Grad.** | **Reciprocity with** |
| Chicago College of Medicine and Surgery | (1914) | | Illinois |
| Rush Medical College | (1915) | | Utah |
| Kansas City Medical College | (1900) | | Missouri |
| St. Louis University | (1911) | Illinois; (1913) | Utah |
| John A. Creighton Medical College | (1912) | | Nebraska |
| Lincoln Medical College | (1909) | | Nebraska |
| Medical College of Ohio | (1909) | | Utah |
| Jefferson Medical College of Philadelphia | (1908) | | Penna. |
| University of Pennsylvania | (1898) | | Penna. |
| College of Physicians and Surgeons, Dallas | (1905) | | Oklahoma |

# Social Medicine, Medical Economics and Miscellany

## COMBATING VENEREAL DISEASES

A report on venereal disease (*Münchener medizinische Wochenschrift*, 1916, **63**, 1691) has just been issued by a special committee appointed by the Munich Aerztliche Verein, a medical association, to study questions affecting the preservation and promotion of racial vigor (*Volkskraft*). Venereal diseases, it states, are "next to alcohol and tuberculosis the most dangerous enemies of the human race. The knowledge of this seems to be gradually making its way into wider circles. There is now hope that the importance of this hitherto much neglected field will gradually come to be appreciated. The time has arrived for rousing the community to more energetic measures. It is self-evident that with diseases which are so amenable to treatment as the venereal diseases, everything depends on getting all the persons affected to take thorough treatment. With this, and only with this, is it possible to restrict the spread of these plagues, the prevalence of which is suspected only by the few. . . . It is a known fact that, at present, persons with venereal diseases in the overwhelming majority of cases get inadequate treatment. This, experience has shown, is due less to the fact that they do not seek medical aid as that they think they are cured as soon as the acute manifestations have subsided. They think that they are cured, or at least they do not regard it as worth while to take further treatment. Syphilitics seldom find it convenient to repeat the course of treatment necessary for a cure unless unmistakable recurrence of the manifestations drives them to a physician. For these reasons the Aerztliche Verein of Munich advocates in the most forcible manner legislative measures to insure that persons affected with venereal diseases get treatment and, especially, that they are kept under treatment and under medical control until they are cured and no longer a menace to others. The carrying through of adequate treatment seems impossible, however, so long as it is optional for the heedless, the unreasonable or the indifferent to let themselves be treated or not. It is therefore essential that the authorities should be empowered to compel those with venereal disease to take proper and adequate treatment. As a logical corollary, the authorities must know what persons they are to compel to take treatment. Compulsory treatment therefore presupposes compulsory notification.

### LEGISLATION ADVOCATED

"The Munich Aerztliche Verein therefore advocates legislative provision for compulsory notification and compulsory treatment of venereal diseases. The association does this only after mature deliberation and weighing of all the reasons for and against such a measure. It is well aware that this conflicts with widespread and apparently well founded considerations. But examination of the latter more closely shows that they cannot be regarded as unimpeachable. The chief objection is that compulsory notification would prevent those affected from seeking the aid of a physician. They would either apply to quacks or let their disease go untreated. That the latter would not occur is guaranteed by the pains and fear of the disease, which would be more and more effectual the more the public is enlightened on the subject of venereal diseases. Even now nearly all affected apply for treatment so long as there are appreciable manifestations of the disease. The quacks could be prohibited from treating venereal disease, as the military authorities have now enforced, or, if this proves impracticable, they would have to conform to the regulations in regard to compulsory notification. With energetic measures on the part of the authorities, any failure to comply with the regulations would be a difficult and expensive matter. Of course any physicians failing to comply with the regulations would also be liable to penalty.

"The objection that regulations of this kind would encounter invincible opposition on the part of the people seems to be unfounded. Wide and influential circles are of the same mind as our association in this matter, as has been ascertained by written and verbal communications from various quarters. To assume that the medical profession would not do this service for the public welfare is to discredit our profession. It is a favorable circumstance that, just at present, in the consulting dispensaries for venereal diseases which have been organized recently under the auspices of the insurance societies (Landesversicherungsanstalten) throughout the entire empire, we have an arrangement along the same lines. Unfortunately, they are dependent on and subject to the good will of those affected. They have no means of compulsion, and consequently they only half fulfil their purpose. The fact that these consulting dispensaries have received such a welcome everywhere is a sign that the current is flowing in our direction.

"Of course the introduction of compulsory notification and compulsory treatment is an innovation and an experiment, for everything that has been done in this line in other lands has been only half measures. But unless experiments are made, there can be no progress."

### REGULATION FOR COMPULSORY NOTIFICATION

The report then outlines the principles on which the regulations for compulsory notification and compulsory treatment should be based. It calls for notification of gonorrhea of the urinary and sexual organs, conjunctiva and rectal mucosa, for ulcus molle, and for syphilis in the first or second phase, and in the tertiary phase when the skin, organs of locomotion, visible mucosa, organs of sense or central nervous system are affected, and for congenital syphilis; notification of change of residence, and notification of patients in hospitals. Notification is imperative even when the patient has applied to the physician for some other ailment. The notification must be in writing on a printed form, free of postage, with details as to whether and where treatment has been applied and whether the patient refuses. Notification is also to be required when treatment is concluded, also on a printed form, specifying whether and when the patient is to be examined or treated again. Notification is also required when the patient stops taking treatment prematurely. An official physician should be deputed to examine those who apply the first time. A special board should have charge of the lists of patients and all the data as to past, present and further treatment. This board should be empowered to warn and compel the patient to submit to treatment, committing him to a hospital for the purpose if necessary. Other members of the family or persons with whom those affected have had sexual intercourse are to be examined and treated, unless injury otherwise is to be feared. The notifying or treating physician can specify when he thinks institutional treatment is necessary on account either of living conditions, carelessness, the profession, refusal to submit to treatment, or the severity of the case. Persons not under the care of any physician can be compelled to submit to examination and to treatment if required. The army and navy authorities should also notify the civil authorities when those requiring treatment pass into civilian conditions. Treatment of venereal diseases by others than registered physicians should be forbidden, as also the sale of means of treatment. Druggists should be allowed to dispense such remedies only on a physician's prescription and only in the prescribed amounts and not repeat. Arrangements should be provided for sufficient treatment for all with venereal disease. The poor should be treated free unless otherwise provided for by the social or life insurance, etc. All physicians, officials and others engaged in the work should be held to strict secrecy in regard to the cases of venereal disease of which they learn in their official capacity. No outsider should be allowed access to the records. Especial care as to secrecy should be maintained in recording the data. The notice, with name, birthplace and birthday and the filled out forms are to be sent to the local board in the patient's birthplace, which is to preserve and record the data.

The report outlines also a set of regulations for the police similar to those in vogue for acute contagious diseases. It specifies that the notification must record the entire name, sex, birthplace and birthday, whether single, married, divorced or widow or widower, the name of the venereal disease, site, kind, stage and previous duration, the time and source of

infection, even if only surmised; details as to previous treatment and by whom, with place and date of the notification, and full name and address of the one making it. The patient must be informed of the necessity for notification, but told that the data are to be held secret. The patient is to be warned against marrying so long as the disease is contagious, and, if marriage is contracted, concealing the presence of venereal disease, the marriage can be annulled under certain circumstances and damages claimed.

The expense of treatment is to be borne by the patient unless provided for by official, insurance, or charitable appropriations. A fine of 90 marks (about $22.50) or a four weeks' prison term are suggested as penalties for failure to comply with the regulations.

THE WOCHENSCHRIFT COMMENTS

In the same issue of the *Münchener medizinische Wochenschrift* with the above appears a comment on the way in which questions affecting the future welfare of the race have been forced into prominence by the war. It is stated editorially: "The full importance of this was realized before the war only by a small number of far-seeing men but the war, by revealing the dangers threatening the race from the declining birth rate, has demonstrated to the widest circles the necessity for energetic measures to combat the causes of the decline in the birth rate. Associations have been formed at various points to study the questions involved. In this same issue of the *Wochenschrift* are reports of the meetings of three organizations of the kind, two of national scope. The resolutions voted for the combating of venereal diseases are surprising for those who know with what timidity this problem has been approached in the past. Even the National Prevention Society, the Deutsche Gesellschaft zur Bekämpfung der Geschlechtskrankheiten, goes so far as to demand that the venereal diseases be included in the regulations regarding epidemic diseases, the *Seuchengesetz*, and asks for a limited notification. The Munich committee is even more radical in its demands, drawing the ultimate conclusions from the conception of sexual diseases as evils menacing the public health, and hence requiring compulsory notification and compulsory treatment. The conclusions formulated by the committee are worthy of all attention not only because they are clear and logical and have been worked up equally well from the medical and the juristic sides, but because they represent a courageous act thus to break decisively with old traditions. For reserves and attacks will soon follow, and not the least, we fear, will come from the ranks of physicians. Even the comments that have been heard already on the 'consulting dispensaries' for venereal diseases that have been organized throughout the country by the insurance societies, the Landesversicherungsanstalten, show that in medical circles any infringement on the principle of medical secrecy is felt deeply. The official organ of the Medical Chambers, the *Aerztliches Vereinsblatt*, has already declared that the suggestion of compulsory notification of venereal diseases would be the most momentous legislative aberration that it is possible to conceive (*verhängnisvollste gesetzgeberische Verirrung*). The still more far-reaching conclusions of the Munich committee will arouse a storm of protests. And yet there can be no doubt that finally the medical profession will acquiesce in some restriction of the conception of medical secrecy in the matter of venereal diseases as has long been the rule with certain contagious diseases. The principle of compulsory notification and compulsory treatment has proved its usefulness with other contagious disease. It is impossible to understand why for the sexual diseases alone we should renounce this principle just on account of tender solicitude for the false shame of those affected. The sexual diseases are among the worst scourges of humanity. It is our imperious duty to restrict their devastating action on the strength of the nation (*Volkskraft*). Compulsory notification and compulsory treatment are the only measures which promise effectual results, so they must be introduced, even trampling down deep-rooted and otherwise justified ethical considerations. The supreme law which has facilitated so many decisions in the course of the war must prevail here also, *Salus rei publicae*, 'health is a public matter.'"

# *Medicolegal*

## Liability Where Two Physicians are Employed — Minimizing Damages

(*Stokes vs. Long* (*Mont.*), *159 Pac. R. 28*)

The Supreme Court of Montana affirms a judgment in favor of the plaintiff for alleged malpractice in the reduction and treatment of a broken leg. The court says that the plaintiff sent his wife to engage the defendant's services, and the defendant told her that he would need assistance, suggesting that he secure the services of a Dr. Wallin, to which she agreed. There was much conflict in the evidence as to the course of treatment pursued. According to the plaintiff, his wife, and other lay witnesses, the leg was inclosed in a plaster cast without any opening. A weight of 4¾ pounds was attached to the foot by means of a cord held by strips of surgeon's plaster adhering to the leg. No means were employed, such as the elevation of the foot of the bed, to prevent the body from slipping down in the bed, as it yielded to the pull of the weight. No examinations were made by means of the Roentgen-ray process, nor were the usual necessary superficial measurements made from day to day. No examination could be made by manipulation because the cast prevented. The court thinks the evidence made a prima facie case for the jury as to whether ordinary care and skill had been exercised in selecting the means employed to produce a proper union. On the other hand, if the testimony of the defendant and Dr. Wallin were to be accepted as true, the plaintiff had no case, for, as detailed by them, the course pursued was in every particular beyond criticism. Yet, even so, the evidence as a whole presented a question as to whether, in view of the result, their testimony was true, and this question was exclusively for the jury.

It was contended, furthermore, that Dr. Wallin reduced the fracture and chose the mechanical appliances which were used; that the defendant only administered the anesthetic, and five days later left for Florida, without having taken any part in the treatment of the injury. In other words, the contention was that, since the defendant was authorized by the plaintiff to employ Dr. Wallin, and he performed the operation of reduction and thereafter treated the plaintiff exclusively, Dr. Wallin's employment constituted an independent contract under which he became solely responsible to the plaintiff. If the evidence were in the condition which counsel asserted, their conclusion would undoubtedly be correct. If one physician, on leaving temporarily the community in which he is engaged in practice, recommends to his patients the employment, in case of need, of some other physician who is not in any sense in his employment or associated with him as a copartner, he is not liable for injuries resulting from negligence or want of skill in the latter, in case he is employed. In such case the employment of the latter is under an independent contract, and he is solely responsible for the result. It is held also that when two physicians are employed in the same case and by agreement divide the service as their best judgment may dictate, they are considered as independent agents, each being responsible for his own negligence and no more. If, however, one observes and lets go on without objection wrongful acts and omissions by the other, or if the circumstances are such that he ought to have observed such wrongful acts or omissions, he is liable. Each is bound to bring to the case the ordinary knowledge and skill of the profession, and also to give his best personal attention and care. If one is guilty of want of ordinary professional care and skill in choosing the mode of treatment adopted, and the other expressly or impliedly gives his approval, there is no reason apparent why the latter should not be held guilty also, for by his acquiescence he fails to give the care and attention his employment requires. However, the court thinks the evidence in this case did not justify the position of counsel, but justified the conclusion that the defendant considered the case his own until he left, and that both physicians were to be deemed responsible for the result, there being evidence that the treatment was vicious from the

start, as "Buck's extension" or other adequate appliance was not used.

In order to minimize the injurious consequences of a bodily injury suffered through the fault of another, one is not necessarily bound to submit to a major surgical operation which may or may not result in a betterment of his condition; but, if he chooses to do so, he may show what would be the cost of an operation which would minimize the suffering due to his condition at the time of the trial, though he cannot recover for both future pain and the cost of obtaining relief from it.

### Contract of Hospital to Care for Infant Received Along With Mother

*(Keche vs. St. John's Riverside Hospital (N. Y.), 160 N. Y. Supp. 401)*

The Supreme Court of New York, Special Term, Westchester County, holds that it is within the power of a hospital to contract to receive an infant along with its mother and to exercise over it careful supervision and watchfulness in order that it may not suffer harm while the mother is undergoing a course of treatment, and that an action may be maintained by the administrator of the estate of the infant when its death is caused by a breach of such contract, as when its head is permitted to come into contact with a steam pipe and to remain so long that its death is caused by the burn. The court thinks that it has authority for holding this to be true even if the hospital be a charitable institution.

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# *Society Proceedings*

## COMING MEETINGS

Congress on Medical Education, Public Health and Medical Licensure, Congress Hotel, Chicago, Feb. 5-6.
Western Roentgen Society, Hotel Sherman, Chicago, Feb. 16-17.

## SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

*Twenty-Ninth Annual Meeting, held at White Sulphur Springs, W. Va., Dec. 11-13, 1916*

(Concluded from page 222)

### Transplantation of the Ureter Following Traumatism and Resection of the Bladder for Cancer

DR. E. STARR JUDD, Rochester, Minn.: The indications for ureterocystotomy are threefold: (1) injury to the ureter during hysterectomy usually for an advanced carcinoma of the cervix; (2) traumatism of the ureter during difficult instrumental labors, and (3) resection of the bladder for cancer located about the ureteral orifice. Intravesical transplantation of the ureter can be performed and the function of the kidney maintained. It is entirely feasible and altogether the procedure of choice in cases of ureteral fistula, and is much to be preferred to sacrificing the kidney.

DISCUSSION ON PAPERS OF DRS. JACKSON, HUNNER AND JUDD

DR. R. C. COFFEY, Portland, Ore.: In 1910 I reported some experimental work on implantation of the ureter by running the ureter along the mucous membrane three-quarters inch before it enters the bladder. I have since that time implanted four ureters into human beings, one a double implantation. In one the ureter at the time was implanted for exstrophy of the bladder, the operation having been done two years ago. That patient was in perfect health. There is no evidence of ascending infection. I have had two cases of cancer of the bladder; one patient went along for eight months with the ureter functionating perfectly, but I have not heard from this patient for over a year.

DR. J. WESLEY BOVÉE, Washington, D. C.: Implantation of the ureter into the bladder for injuries is an operation which should be avoided. It is one in which we must expect, as a rule, bad results. The bad results, when we have immediate success in the operation, are almost exclusively due to constriction at the point of junction or to too large an opening. We get a backing up of urine in the ureter and in the pelvis of the kidney which sooner or later does away with the function of the kidney, if we have a stricture at the point of junction.

DR. ROBERT L. PAYNE, Norfolk, Va.: In 1907 I carried out some experimental work in uretero-ureteral anastomosis. There is no structure in the body which heals more kindly and lends itself so well to surgical intervention as the ureter if it is handled properly. The success of surgical procedures on the ureter depends on the blood supply. The ureter must be handled with extreme gentleness in order not to compress or injure it and set up thrombosis of its periureteral blood supply.

DR. HOWARD A. KELLY, Baltimore: Many mild infections are liable to result in stricture of the ureter. My work has been confined very largely to strictures of the ureter of major caliber, and they are tighter. I have some of these cases on hand now that are interesting. I remember my first case in 1888. I diagnosed a tight stricture of the ureter and treated the patient for some time. We were not recognizing tuberculosis then as readily as we are today, and it was a case of tuberculosis. In 1891 I took out the kidney, doing a nephro-ureterectomy. The patient died at the end of one week. My next case was one of gonorrheal stricture of the right ureter. I dilated this stricture, and the woman got well, and is living today.

DR. CHARLES R. ROBINS, Richmond, Va.: In the first case that came under my observation the patient had a bleeding uterus due to fibroids. She gave a history of having had the left kidney removed about ten years previously. On account of the fact that she had only one kidney left, we made an elaborate examination and were not able to detect any trouble with the right kidney. Hysterectomy was performed without any untoward result, except that as the patient was convalescing from the operation she developed a high degree of pyelitis in the right kidney. As there was only one kidney to deal with, it gave me considerable concern. This was treated by lavage of the kidney, and after a rather slow convalescence lasting for a long time, she finally made a recovery sufficient to go home. Her fever, which was high and subject to extreme exacerbations, had gone down to normal, and she was allowed to go home, although there was still some pus in the kidney. Lavage was practiced at regular intervals, and we were unable to discover anything which would suggest that the patient had a stricture of the ureter.

DR. GEORGE TULLY VAUGHAN, Washington, D. C.: I have seen two or three cases, one in a man aged 24, who had trouble in his right side of a chronic character off and on for a considerable time. Cystoscopy revealed no urine coming from the right ureter. He was operated on because of appendicitis. The appendix was found much inflamed, and inflammatory tissue surrounded the ureter. The ureter above this point was dilated; below it was very small. The appendix was removed, the tissue dissected off, and the urine passed down through the constricted part of the ureter into the bladder. I operated on this patient about six months ago; he continued to pass urine from that side, but after six months there has been a subsidence.

### Syphilis of the Stomach

DR. WILLIAM A. DOWNES, New York: Observations have been made in eight cases of syphilis of the stomach for periods extending from one and one-half to three and one-half years. Two cases were of the congenital type, and six of the acquired. One patient died of a generalized syphilis one and one-half years after the diagnosis was made. The remaining seven are well from a clinical standpoint, so far as their stomach symptoms are concerned. They are able to follow their usual vocations, and have gained from 10 to over 50 pounds in weight. Five of the patients were subjected to gastro-enterostomy for the relief of symptoms due to obstruction.

### Congenital Lipoma of the Cheek

DR. JOSEPH RANSOHOFF, Cincinnati: The first patient was a child of several months with a large myxolipoma of the cheek. The second case, also congenital, is of the cheek. The child was operated on when 1 year of age. The second

operation revealed the fact that in conjunction with the lipoma there was very extensive lymphangioma. In many of these congenital lipomas, the lymphangiectasis is a common complication.

### Traumatic Asphyxia

DR. J. GARLAND SHERRILL, Louisville, Ky.: A bridge builder, aged 35, was caught and squeezed; he was doubled up and his head brought down on his knees by at least 7 tons of metal. He presented marked ecchymosis and swelling over the head and forehead and down to the malar bones. This area was dark purple and clearly delineated by an abrupt margin where the healthy color of the skin joined the swollen discolored part. Pressure did not affect the discoloration. There was present a subconjunctival hemorrhage on each side which was bright red, contrasting strongly with the purplish discoloration of the adjacent tissues—a striking appearance. Rupture of each eardrum with hemorrhage from the ear canal was noted. Bleeding also occurred from the nose. There were no other injuries, except a few minor bruises and a fracture of the seventh rib on the right side. The patient was fully conscious and the reflexes were normal, with no evidence of cerebral injury. The pupils were equal and responsive to light and accommodation. The diagnosis of traumatic asphyxia was confirmed by the subsequent history of the case. The patient recovered without untoward incident.

### Zinc Chlorid in Uterine Hemorrhage, Particularly When Caused by Uterine Myomas and Metro-Endometritis

DR. H. J. BOLDT, New York: I do not approve of the removal of the uterus for bleeding if it is not the seat of a neoplasm. Zinc chlorid is used in all instances of severe bleeding, whether due to metro-endometritis or simple endometritis, but particularly when caused by interstitial myomas of small size. In large tumors, especially of the uterus, it is more desirable to extirpate. I use a 50 per cent. solution of zinc chlorid more frequently than weaker solutions. Care must be taken to avoid having the medicament come in contact with the cervical mucosa lest a stricture result. In several instances of very profuse bleeding from interstitial myomas, some measuring about 6 inches in diameter, in women past 40 years of age, I have seen complete amenorrhea established after using twelve, or even a less number of zinc chlorid applications. While the tumors do not decrease in size, the health of the patients improves as the result of amenorrhea. There must be no oozing of blood from the endometrium when the intra-uterine applications are made; the uterine cavity must be dry. If it is not, it may be prepared with an intra-uterine tampon of styptic gauze.

### Cancer of Mammary Tissue Misplaced in Axilla

DR. J. SHELTON HORSLEY, Richmond, Va.: An unmarried woman, aged 46, who had two sisters with cancer, noticed a growth in the right axilla which became quite painful. There was no evidence of any primary lesion elsewhere. An examination of removed tissue showed it to be malignant. Three years and four months after the operation, the patient was entirely free from recurrence.

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**Prosecution of Quacks and "Patent Medicine" Fakers.**—A recent *Bulletin* of the New York City Department of Health gives a list of the prosecutions made by the department under that section of the Sanitary Code regulating the manufacture or sale of drugs or medicines which are adulterated or misbranded. Most of the cases prosecuted thus far have been by inspectors of the Bureau of Food and Drugs. During the past three months, Anthony Ofries has been fined $100 for selling phenacetin which was adulterated; Charles Stiriz was given thirty days for selling a paralysis "cure"; Smith and Zibriskie were fined $800 for selling an infantile paralysis "cure"; Salvatore F. Sellarc for the use of wood alcohol, $500 and thirty days; J. A. Miller for adulterating phenacetin and other tablets, $500, and Peter U. Russ for selling a consumption "cure," $100 or thirty days. A number of additional cases are now waiting trial.

# *Current Medical Literature*

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Diseases of Children, Chicago

*January, XIII, No. 1*

1 *Three Cases of Congenital Familial Cyanosis and New Method of Diagnosis of Congenital Heart Lesions. J. H. Hess and R. G. Pearce, Chicago.—p. 1.
2 *Phenol Excretion in Urine of Infants, Including New-Born. C. U. Moore, Portland, Ore.—p. 15.
3 *Chemistry of Spinal Fluid of Children. J. S. Leopold and A. Bernhard, New York.—p. 34.
4 Alkali and Earth Alkali Equilibrium in Spasmophilia. C. G. Grulee, Chicago.—p. 44.
5 Acrocephaly; Report of Two Cases. P. Lewin, Chicago.—p. 61.
6 *Excretion of Sodium Chlorid Solution Injected Subcutaneously. L. E. Holt, A. M. Courtney and H. L. Fales, New York.—p. 73.
7 Factor of Inanition in Development of Acetonuria in Children. B. S. Veeder and M. R. Johnston, St. Louis.—p. 89.
8 *Infantile Scurvy. Therapeutic Value of Yeast and of Wheat Embryo. A. F. Hess, New York.—p. 98.

1. **Congenital Familial Cyanosis.**—The results of the analyses made by Hess and Pearce show that the cyanosis is not a faulty gas exchange of the blood as it passes through the lungs, for this is above normal, but rather lies in a reduction of the amount of blood which reaches the left ventricle from the pulmonary circulation. The rate of blood flow is normal or above normal through the systemic circulation. They believe, therefore, that the blood sent from the left ventricle is a mixture of venous and arterial blood, and that the tension of oxygen in the arterial blood is below that normally found. The larger percentage of reduced hemoglobin in the arterial blood than is found in normal individuals imparts the blue color to the skin. The amount of oxygen, however, delivered to the tissues is sufficient to meet their needs, due at least in part to the increased hemoglobin content of the blood; and the amount of carbon dioxid excreted by the lungs is kept within normal limits by the greater difference in the effectual diffusion pressure of carbon dioxid between arterial and venous blood in the lungs.

The cyanotic boys are not different from other boys in their ability to do the ordinary things of life. However, their power of endurance does not compare with that of a normal boy. When forced pulmonary ventilation is pushed, the color markedly improves. These boys are all subject to bronchitis and this tendency might be explained on the assumption that a deficient oxygen supply in the blood of the bronchial artery is a factor in producing congestion or edema in the lungs. The authors conclude that the pathology consists of a cardiac abnormality. The methods, outlined, afford a new means of investigating the relationship of the pulmonic circulation to the systemic circulation, and in the present case renders the diagnosis of a septal or ductus defect highly probable.

2. **Phenol Excretion in Urine of Infants.**—In the series of fifteen infants examined by Moore the phenol excretion per kilogram of body weight is less in the breast-fed than in the artificially fed infant. In infants and in adults there is an interrelation between the total phenol excretion and the protein intake as measured by the total nitrogen excreted in the urine. This relation can be expressed in the general term, trebling the protein intake doubles the phenol excretion. Contrary to the earlier findings, phenol is quantitatively present in the urine of every new-born infant, the average of these nineteen cases being 11.2 mg. for the first three days of life. As phenol is present during this period of starvation, it must originate in part through endogenous metabolism.

3. **Chemistry of Spinal Fluid of Children.**—Chemical examination of the spinal fluid in ten normal cases in children gave the following results: The total nonprotein nitrogen varied between 17 and 26 mg. per 100 c.c. of fluid, the urea nitrogen varied between 7 and 13.5 mg.; the creatinin varied between 0.7 and 1.5 mg. In no case was there enough uric acid present in the spinal fluid to give a positive quantitative test. The sugar content varied within very narrow limits (0.07 and 0.1 per cent.). The concentration of total nonprotein nitrogen in

the spinal fluid averaged 75 per cent. of that in the blood, the urea 82 per cent. of that in the blood and the creatinin 60 per cent. of that in the blood. The chemical examination of the spinal fluids from diseased children showed the following conditions: In chorea, idiocy, syphilis, epilepsy and enuresis the nonprotein nitrogenous constituents of the spinal fluid closely paralleled the normal.

In acute nephritis without uremic symptoms the total nonprotein nitrogen was slightly increased and uric acid was present in small amounts. In acute nephritis with uremic symptoms the total nonprotein nitrogen, urea and creatinin were markedly increased and uric acid was present in slight amounts. The sugar content was also increased. In serous meningitis the nonprotein nitrogenous constituents, as well as the sugar content were within normal limits. In tuberculous meningitis the total nonprotein nitrogen and the urea were normal, but the creatinin was slightly increased. Uric acid was present in every case, but the sugar content was normal or slightly reduced. In cerebrospinal meningitis the nonprotein nitrogenous constituents were normal, but the sugar content was reduced. In a fatal case of meningitis in which the streptococcus was found, the nonprotein nitrogenous constituents were normal and sugar was absent. In the early stages of infantile paralysis the nonprotein nitrogenous constituents, as well as the sugar content, were within normal limits.

6. **Sodium Chlorid Excretion.**—The authors' metabolism studies support the clinical conclusions as to the beneficial effects of repeated saline injections.

8. **Yeast and Wheat Embryo Infantile Scurvy.**—Clinical experience demonstrated that yeast is of no value in scurvy either as a prophylactic or as a curative dietetic agent. It was found, however, to possess virtue as a stimulant to growth, when added to the milk in the form of the fluid autolyzed yeast or given to older infants as a desiccated powder. The embryo or germ of the wheat seed manifested some value as an antiscorbutic, but not sufficient to render it useful in this connection from a practical or clinical standpoint. The watery extract, which is readily prepared, was found to stimulate growth, and may be used to advantage, on account of this quality, as a substitute for barley in milk preparations.

## American Journal of Medical Sciences, Philadelphia

*January, CLIII, No. 1*

9 Abnormalities of Growth. L. B. Mendel, New Haven, Conn.—p. 1.
10 Syphilis of Stomach: Report of Twenty-Three Cases. G. B. Eusterman, Rochester, Minn.—p. 21.
11 Intermediary Metabolism in Diabetes. G. Lusk, New York.—p. 40.
12 *Clinical Significance of Glucose-Nitrogen Ratio in Diabetes Mellitus. N. W. Janney, New York.—p. 44.
13 *Starvation Treatment of Diabetes. C. F. Martin and E. H. Mason, Montreal, Canada.—p. 50.
14 *Influence of Acidosis on Hyperglycemia in Diabetes Mellitus. A. A. Epstein and J. Felsen, New York.—p. 58.
15 *Fatal Case of Diabetes Mellitus Associated with Large Cell Hyperplasia. J. R. Williams, Rochester and M. Dresbach, Ithaca, N. Y.—p. 65.
16 Renal Glycosuria. J. R. Murlin and W. L. Niles, New York.—p. 79.
17 Clinical Studies of Acidosis. J. H. Austin and L. Jonas, Philadelphia.—p. 81.
18 *Toxemias of Pregnancy. J. R. Losee and D. D. Van Slyke, New York.—p. 94.
19 Determining Intragastric Temperature in Man; Variations After Ingestion of Hot and Cold Liquids and During Digestion. A. Stengel and A. H. Hopkins, Philadelphia.—p. 101.
20 Aspirating Bougie for Esophagus and Stomach. M. Einhorn, New York.—p. 106.
21 *Treatment of Circulatory Failure in Acute Infections. M. Goodridge, New York.—p. 107.

12. **Glucose-Nitrogen Ratio in Diabetes Mellitus.**—By means of improved experimental methods it was established by Janney that the fasting urinary glucose-nitrogen ratio of severe diabetes mellitus is about 3.4:1. The glucose-nitrogen ratio is, therefore, to be regarded as a definite index of the severity of this disease. In association with other factors to be considered, the glucose-nitrogen ratio is a valuable prognostic sign.

13. **Starvation Treatment of Diabetes.**—Two important points are worthy of note in the authors' observations: 1. The ferric chlorid reaction is sometimes absent when acidosis is present, and is less sensitive, too, than the nitroprussid reaction. 2. The urine does not always show a reaction for acidosis even when the blood gives a positive quantitative result, therefore, the excretion of the acid bodies is not necessarily an index of the degree of acidosis, while in diabetes the reverse occurs. Sometimes, however, in Martin and Mason's cases, acidosis was initiated by the starvation, at other times a preexisting acidosis was increased, though usually it disappeared. Evidently there is a variation due to many circumstances, though starvation ultimately does make the urine acid free. In one persistent case of very mild diabetes, with prolonged mild acidosis, interrupted periods of a fat free diet seemed especially useful in clearing up remnants of the acidosis. In one very severe case in which the acidosis disappeared on starvation, it developed again on a protein-fat diet, and later on disappeared with one day of starvation. Sodium bicarbonate was given (32 gm. per diem) for five days, with resulting elimination of more ketone bodies. Excretion of these bodies ceased again with cessation of bicarbonate administration. Another experience worthy of note is the varying ratio of the acetone bodies to beta-oxybutyric acid. Sometimes there is much acetone and little beta-oxybutyric acid, and sometimes the reverse occurs. There seems to be little constancy, and the percentage of 60 to 80, as usually recorded, is subject to many wide exceptions.

14. **Hyperglycemia in Diabetes.**—The study made by Epstein and Felsen showed that the withdrawal of food from certain cases of diabetes provokes, or aggravates the acidosis. The acidosis causes an increase in the blood sugar content, in one of two ways: (*a*) by augmenting the mobilization of sugar, and (*b*) by affecting the sugar secreting function of the kidneys. Liberal, but judicious, administration of carbohydrate may control the acidosis provoked by the withdrawal of carbohydrates or complete fasting, thus leading to a general amelioration of the diabetes. A progressive rise in the blood sugar content, associated with a gradual fall in the alveolar carbon dioxid is indicative of impending coma.

15. **Fatal Case of Diabetes Mellitus.**—A case of fatal diabetes with large cell hyperplasia of the spleen, lymph nodes and liver is presentd by Williams and Dresbach. It is the fourth case on record so far as the authors can tell. The hyperplasia has some resemblance to the cell changes in Gaucher's disease of the spleen. It is shown that overfeeding with fat increases acidosis in diabetes and probably bears some relation, as yet not understood, to lipoidemia. The acidosis is readily controlled. A brief discussion of some of the newer ideas regarding fat metabolism is given.

18. **Toxemias of Pregnancy.**—Losee and Van Slyke found that neither blood nor urine of eclamptic women shows, as a rule, an amino-acid content above normal limits. Inspection of the other nitrogen figures of the urine shows that the urea in eclampsia is usually below the average normal, often strikingly so, even if calculated on the basis of total nitrogen of the urine minus the albumin nitrogen. The only eclamptic urines which showed more than 70 per cent. of urea nitrogen were those obtained one or more days postpartum. The ammonia was often higher than the average in normal individuals, but the abnormality is less striking than that of the urea. All the cases of pernicious vomiting showed strikingly high ammonia percentages; none of the cases showed less than 16.9 per cent. In five cases of nontoxic pregnancy the nitrogen ratios were normal. The authors conclude that the toxemias of pregnancy can be attributed neither to failure in diaminization of the amino-acids, nor to the moderate degree of acidosis observed. The nature of the toxin or toxins remains unknown.

21. **Circulatory Failure in Acute Infections.**—In Goodridge's opinion there is neither clinical nor experimental evidence to support the belief that failure of the vasomotor center is the cause of the symptoms of circulatory failure which occur in acute infectious disease. While it has been shown experi-

mentally that the heart is not exhausted in animals dying of acute infectious diseases, there is no positive proof that the myocardium is wholly efficient in its effect to maintain the circulation in the body of the living animal under such circumstances. The hypothesis which suggests the existence of a third center controlling the flow of blood is important even though it is not yet proved. Alcohol and strychnin are absolutely worthless drugs in the treatment of circulatory failure. Epinephrin and pituitary extract are useful in the treatment of sudden circulatory collapse, but their action is not a sustained one. The nitrites are valuable additions to the therapeutic armamentarium in the treatment of pulmonary edema under certain circumstances, because of their selective action in constricting the pulmonary arteries. Caffein increases the flow of blood when the supply to the heart is "inadequate," probably by an action on some mechanism outside of the heart. One of the most important contributions of recent times on the action of digitalis is the proof electrocardiographically that it exerts precisely the same effect on the heart in febrile conditions that it exercises in nonfebrile states, and whether the rhythm is initiated in the normal pacemaker or not.

### American Journal of Roentgenology, New York

*December, 1916, III, No. 12*

22 *Roentgen Examination as Aid in Differential Diagnosis between Pneumonia and Empyema, Especially in Children. W. H. Stewart, New York.—p. 559.
23 Practical Points on Use of Intensifying Screens and on Their Selection and Care. H. Threlkeld Edwards, South Bethlehem, Pa.—p. 585.
24 Device for Obtaining Lateral Roentgenograms of Spine in Hyperextension. R. Hammond, Providence, R. I.—p. 589.
25 Plan of Roentgen Department in Hospital. P. M. Hickey, Detroit. —p. 590.

22. Abstracted in THE JOURNAL, Nov. 18, 1916, p. 1549.

### Archives of Pediatrics, New York

*December, 1916, XXXIII, No. 12*

26 Pertussis. I. A. Abt, Chicago.—p. 881.
27 Care and Asepsis in Hospitals for Infants. A. Strauch, Chicago. —p. 899.
28 *Heart Disease in Infancy and Childhood. A. L. Goodman, New York.—p. 909.

28. **Heart Disease in Infancy and Childhood.**—Cases of rheumatism in children are treated by Goodman in the following manner: During an acute attack give the patient sodium salicylate, if this is not well borne by the mouth, use it per rectum. If there is already an accompanying heart condition, use fluidextract of digitalis and spartein sulphate in rather large doses. If there is no accompanying heart complication, give smaller doses and examine the heart at frequent intervals to observe any occasion for increasing the dose. The children are kept in bed until all vestige of pain has disappeared, and the heart sounds have improved or become normal. The children's guardians are then warned of the so-called "growing pains," and the moment the pains reappear, or difficulty in walking is noticed by the parents, the children are at once placed in bed and the salicylate given every hour or two until the pain has disappeared. Give the salicylate, after an attack, two or three times a day for two weeks longer. Children with rheumatism should not be subjected to extremes in temperature. Rapid evaporation from the surface of the body should be avoided. In summer light cotton underwear should be used, and in winter a mixture of wool and cotton will be found more serviceable, as it is not so heavy as the wool alone, and, absorbs perspiration more readily than the allwool garment.

The children should receive daily lukewarm baths, never hot and never cold, followed by a brisk rubbing with a coarse bath towel. If there exists any adenoid growth or enlarged tonsils they should be removed. When the children come in from the street after play their stockings should be removed, their feet rubbed dry, and a fresh pair of stockings substituted. Damp dwellings should be avoided. Parents with children subject to rheumatism should be told that they may not live on the ground floor. The sleeping room should be sunny and have a southern exposure, if possible. In reference to diet: Beef should be avoided, especially beef juices or extracts; spiced and fried foods should not be permitted. Sweets, such as candy and pastry, should be forbidden, and, above all, coffee, tea and alcohol.

### Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

*January, IX, No. 7*

29 Fat Dystrophies of Endocrinous Origin. H. G. Beck, Baltimore —p. 98.
30 Relation of Glands of Internal Secretion to Female Pelvic Organs. C. W. Vest, Baltimore.—p. 102.

### California State Journal of Medicine, San Francisco

*January, XV, No. 1*

31 Diabetes in Pregnancy; Report of Cases. W. A. Beattie, Sacramento.—p. 11.
32 Use of Whole Blood in Hemorrhage; Report of Cases. H. F. Oliver, San Francisco.—p. 13.
33 Attitude of Physician toward Venereal Patient. A. M. Meads, Oakland.—p. 15.
34 Obscure Symptoms of Rheumatism in Children. J. A. Colliver, Los Angeles, Cal.—p. 18.
35 Treatment of Fractures of Long Bones. S. J. Hunkin, San Francisco.—p. 20.
36 *Trial of Goodman's "Autoserum" Treatment of Chorea. H. K. Faber, San Francisco.—p. 27.
37 Case of Typhus Exanthematicus in San Francisco. L. C. Brill, San Francisco.—p. 29.
38 Sulphur as Remedy for Rheumatism. W. F. McNutt, San Francisco.—p. 30.

36. **Goodman's "Autoserum" Treatment of Chorea.**—Goodman's method consists in the injection, one to four times repeated, of the patient's own serum into the subdural space of the spinal canal. Faber says that improvement, shown by the disappearance of choreic movements, occurs frequently within three days, or even less, and a majority of cases remain permanently free of movements. Certain instances of recurrence are mild and readily amenable to the action of another injection. Of the thirty cases treated by Goodman fourteen received one injection, eight received two injections, five received three injections, and three received four injections. Of those receiving one injection, twelve were cured and two markedly improved. Of those receiving two injections, five were cured and three markedly improved. Of those receiving three injections, two were cured and one markedly improved, one slightly improved, and one unimproved. Of those receiving four injections, one was cured, one markedly improved and one unimproved. Faber used the method in three cases. An almost immediate cessation of choreic movements followed a single injection of the patient's own serum into the spinal canal, and no recurrence of symptoms has occurred in a little over a month.

### Florida Medical Association Journal, Jacksonville

*December, 1916, III, No. 6*

39 Hormones and Hormone Therapy. J. E. Caldwell, Bradentown. —p. 161.
40 Duty of Physician Toward Eradication of Malaria. G. E. Henson, Jacksonville.—p. 165.
41 Vitamin. A. W. Downs, Philadelphia.—p. 169.
42 Treatment of Morphin Habit. W. C. Douglass, Tampa.—p. 172.
43 Herniotomy. S. Stringer, Tampa.—p. 174.
44 Poliomyelitis or Heine-Medin's Disease. G. H. Benton, Miami —p. 176.
45 Alcoholic Insanity; Report of Case. D. C. Main, Welaka.—p. 181.
46 Pituitary Extract. G. C. Kingsbury, Largo.—p. 182.
47 Calomel. L. S. Oppenheimer, Tampa.—p. 183.

### Illinois Medical Journal, Chicago

*January, XXXI, No. 1*

48 Roentgen Diagnosis of Chest Lesions. A. Hartung, Chicago.—p. 1.
49 Health Insurance from Standpoint of Physician. G. T. Palmer, Springfield.—p. 5.
50 Dementia Praecox Studies. B. Holmes, Chicago.—p. 9.
51 Vaccine Therapy in Treatment of Modern Diseases. F. M. Wood, Chicago.—p. 13.
52 Symptoms and Diagnosis of Infantile Paralysis. T. McEachern, Rochelle.—p. 21.
53 Epidemic of Typhoid. W. M. Friend, Park Ridge.—p. 23.
54 Brief Review of Pavlov's Work. J. J. Moorehead, Chicago.—p. 25.
55 Diabetes Mellitus—Why do Glycosuria and Acidosis Increase During Work in Some Diabetics? Suggestion in Treatment. M. B. Leviton, Chicago.—p. 34.
56 Mental Mechanisms. B. F. Williams, Lincoln, Neb.—p. 35.

57 Cerebrospinal Syphilis Treatment. C. D. Humes, Indianapolis. —p. 38.
58 Case of Juvenile General Paresis. F. C. Potter, Indianapolis. —p. 40.
59 Case of Bilateral Lenticular Degeneration. M. A. Bahr and F. C. Potter, Indianapolis.—p. 44.
60 Education of Feebleminded. G. Bliss, Fort Wayne, Ind.—p. 46.
61 Report of Cases Recently Discharged from Watertown State Hospital. F. A. Causey, East Moline.—p. 47.
62 Case of Alcoholic Polyneuritis with Unusual Trophic Disturbances. G. B. Hassin, Chicago.—p. 51.
63 Accessory Sinuses of Nose. W. H. Gardner, Bloomington.—p. 54.

### Journal of Immunology, Baltimore

*December, 1916, II, No. 1*

64 *Comparison of Antigenic Properties of Different Strains of Bacillus Typhosus. S. B. Hooker, San Francisco.—p. 1.
65 *Hecht (Gradwohl Modification) Complement Fixation Reaction in Syphilis with Special Reference to Cholesterinized Antigens. J. A. Kolmer, Philadelphia.—p. 23.
66 *Correct and Incorrect Methods of Performing "Daily Titrations" for Wassermann Reaction and Other Forms of Complement Fixation. R. Ottenberg.—p. 39.
67 Methods of Determining Optimal Amount of "Antigen" for Wassermann Reaction. R. Ottenberg, New York.—p. 47.
68 *Study of Two Hundred and Ninety Postmortem Wassermann Reactions. S. Graves, Louisville, Ky.—p. 53.
69 *Study of Von Dungern's Indigo Test for Syphilis. E. P. Flood, New York.—p. 69.
70 *Comparative Study of Different Methods of Performing Wassermann Test for Syphilis. J. W. Smith, Jr., and W. J. MacNeal, New York.—p. 75.
71 Studies in Anaphylaxis. Mechanism of Delayed Shock. R. Weil, New York.—p. 95.
72 *Id. Simultaneous Injections of Antigen and Antiserum. Anaphylatoxin Theory of Anaphylaxis. R. Weil, New York.—p. 109.
73 Studies on Antibodies. Analyses and Nitrogen Distribution of Number of Antiserums. E. J. Banzhaf, K. Sugiura and K. G. Falk, New York.—p. 125.

64. **Antigenic Properties of Different Strains of Bacillus Typhosus.**—By means of the alexin fixation reaction Hooker was able to demonstrate consistent antigenic differences among some strains of *B. typhosus*. By means of agglutinin absorption experiments, findings have been obtained that, in general, harmonize strikingly with the results of cross fixation. This confirmatory evidence, secured by a widely different serologic method, Hooker says, tends strongly to prove that these antigenic differences among typhoid strains, as demonstrated by alexin fixation, represent an actual condition and are not fortuitous. The facts that a serum immune to any recently isolated strain cross fixes with all other strains, old or young, while serums immune to older strains do not so cross fix, would lead to the seemingly justified assumption that only do the young strains contain all of the antigenic complexes of typhoid bacillary protein. The logical conclusion, then, would be that a young strain ought to afford the most efficient protection when used for prophylactic immunization against typhoid. However, the results of the work on agglutinin absorption, if correctly interpreted, do not warrant the assumption that a univalent vaccine is sufficient. Therefore it seems advisable, for the present, to recommend the use of a balanced polyvalent typhoid vaccine, for immunizing and therapeutic purposes.

65. **Hecht Complement Fixation Reaction.**—The Hecht reaction as modified by Gradwohl, and conducted with a properly standardized antigen Kolmer claims constitutes a very delicate control over the Wassermann reaction, although it possesses a greater negative than a positive value. The fewest pseudoreactions occurred with an extract of acetone insoluble lipoids. An alcoholic extract of syphilitic liver proved of least antigenic sensitiveness and yielded the highest percentage of false or pseudoreactions. The modified Hecht and Wassermann reactions including the use of cholesterinized extracts, yielded similar results in 82 per cent. of a series of 360 serums. The modified Hecht reaction yielded about 16 per cent. more positive reactions and about 12 per cent. more true positive reactions than the Wassermann reaction conducted with a cholesterinized extract as antigen; 26 per cent. more true positive reactions than the Wassermann conducted with an alcoholic extract of liver and 18 per cent. more true reactions than the Wassermann with an extract of acetone insoluble lipoids. Kolmer believes that the modified Hecht reaction has its greatest value as a serologic control in the treatment of syphilis.

66. **Methods of Performing "Daily Titrations" for Wassermann Reaction.**—Ottenberg's experiments demonstrate that in the Wassermann reaction compensating for increased hemolytic strength of the complement by using a diminished amboceptor dose inevitably leads to a negative result in certain grades of weakly positive serums. The correct method of compensating for complements of greater than average hemolytic strength is by using a smaller dose of complement. The method of doing daily complement titrations is greatly to be preferred to the method of keeping the dose of complement fixed and doing daily amboceptor titrations.

68. **Postmortem Wassermann Reactions.**—In 90.4 per cent. of cases showing postmortem anatomic lesions of syphilis or presenting positive evidence of syphilis in their histories the serums postmortem gave positive Wassermann reactions. Only 7 per cent. of 282 cases showed negative reactions in the presence of anatomic lesions (aneurysms) characteristic of syphilis.

69. **Von Dungern's Indigo Test for Syphilis.**—Flood claims that the alkali and not the indigo is the sole inhibiting agent in the von Dungern's test. The method is of no value in the serum diagnosis of syphilis for in a series of 140 serums, forty of which were evidently syphilitic, coagulation occurred in but three, with the prescribed amount of reagent.

70. **Wassermann Test for Syphilis.**—The use of a simple alcoholic antigen, with the first incubation carried out in the ice-box for four to twenty-four hours, was found to be more sensitive in the detection of syphilis than the other procedures tested.

72. **Anaphylatoxin Theory of Anaphylaxis.**—Characteristic anaphylactic symptoms were produced by Weil exceptionally by the simultaneous, but separate, injection of antigen and antibody intravenously. They may be produced by the simultaneous separate injection of two foreign serums or proteins not related as antigen and antibody.

### Journal-Lancet, Minneapolis

*January 1, XXXVII, No. 1*

74 Tubal Pregnancy. M. M. Ghent, St. Paul.—p. 1.
75 Achondroplasia in Calf with Thymus in Place of Thyroid. W. S. Nickerson, Long Lake.—p. 7.
76 Present Status of Treatment of Fractures. O. W. Parker, Ely. —p. 10.
77 Elements of Psychiatry; What Busy Practitioner Should Know About Mental Diseases. H. R. Hummer, Canton, S. D.—p. 15.

### Laryngoscope, St. Louis

*December, 1916, XXVI, No. 12*

78 Cerebellar Abscess; Symptoms and Differential Diagnosis. P. D. Kerrison, New York.—p. 1327.
79 Spontaneous Recovery in Cerebrospinal Meningitis of Otitic Origin; Report of Case. S. McCullagh, New York.—p. 1338.
80 Tubercular Mastoiditis with Sequellae; Multiple Operation; Recovery. W. L. Culbert, New York.—p. 1346.
81 Disease and Surgery of Fifth Nerve. J. F. Barnhill, Indianapolis. —p. 1351.
82 Résumé of Year's Work with Suspension Laryngoscopy. R. C. Lynch, New Orleans.—p. 1360.
83 Removal of Fragment of Tracheotomy Tube from Lung, Six Years After Its Inspiration. F. R. Packard, Philadelphia.—p. 1371.
84 General Surgical Principles as Applied to Tonsillectomy. W. Marshall, Pittsburgh.—p. 1374.
85 Hyperplasia of Paratonsillar Gland After Tonsillectomy. Preliminary Report. H. Hays, New York.—p. 1380.
86 Electric Foot-Switch. A. G. Bryant, Boston.—p. 1383.

### Medical Record, New York

*January 6, XCI, No. 1*

87 Is There Any Relation Between Tuberculosis, Mental Disease and Mental Deficiency? S. A. Knopf, New York.—p. 1.
88 Organization of Special Surgical Unit in General Hospital. H. H. Young, Baltimore.—p. 8.
89 Roentgen Rays in Diagnosis and Treatment of Thyroid and Thymus Enlargement. A. J. Quimby and W. A. Quimby, New York. —p. 13.
90 Diagnosis and Treatment of Trachoma. W. M. D'A. Carhart, New York.—p. 16.
91 Importance of Accurate Diagnosis of Urologic Disturbances Encountered in Gynecologic Practice. W. T. Dannreuther, New York.—p. 19.
92 New Research Work Relating to Alcoholic Question. T. D. Crothers, Hartford, Conn.—p. 21.

### Michigan State Medical Society Journal, Grand Rapids

*January, XVI, No. 1*

93 **To Be Forewarned Is to Be Forearmed.** A. McKenzie, Port Huron.—p. 1.
94 **Diagnosis and Significance of Tuberculous Bronchial Lymph Nodes.** H. M. Rich, Detroit.—p. 7.
95 **Practical Value of Polygraph in Diagnosis of Cardiac Disorders.** C. E. Stewart, Battle Creek.—p. 9.
96 **Tonsillectomy in Adults.** J. J. Moffett, Port Huron.—p. 17.
97 **Case of Sarcoma of Thyroid.** H. J. Vandenberg, Grand Rapids.—p. 18.
98 **Case of Polyserositis.** N. B. Foster, Ann Arbor.—p. 21.
99 **Case of Papulonecrotic Tuberculides.** J. A. Elliott, Ann Arbor.—p. 22.
100 **Case of Suppurative Otitis Media with Complete Thrombosis of Lateral Sinus, Superior Petrosal Sinus and Jugular Bulb with Invasion of Labyrinth.** R. B. Canfield, Ann Arbor.—p. 24.
101 **Unusual Case of Anorectal Fistula.** C. G. Darling, Ann Arbor.—p. 25.

### Military Surgeon, Washington, D. C.

*January, XL, No. 1*

102 **Advantages of Military Training for Young Man.** W. H. Arthur, U. S. Army.—p. 1.
103 **Present System of Recruiting for U. S. Navy and Marine Corps.** M. S. Elliott, New York.—p. 10.
104 **Recruiting for Military Service.** F. T. Woodbury, U. S. Army.—p. 17.
105 **Heart of Recruit and Soldier.** E. K. Tullidge, Austrian Army.—p. 24.
106 **Special Physical Examination of Aviators for U. S. Army.** C. H. Connor; U. S. Army.—p. 29.
107 **Comparative Hearing Requirements in Foreign and American Navies.** G. P. Trible, U. S. Navy.—p. 33.
108 **Demography in so far as it Relates to Vital Statistics of Armies.** W. P. Chamberlain, U. S. Army.—p. 37.
109 **Another Viewpoint of Red Cross Work in Serbia.** S. O. Beasley.—p. 45.
110 **Prophylaxis and Treatment of Tetanus.** A. McGlannan, U. S. Army.—p. 52.
111 *Toxic Effect of Emetin Hydrochlorid. H. H. Johnson and J. A. Murphy, U. S. Army.—p. 58.

111. **Toxic Effect of Emetin Hydrochlorid.**—Emetin hydrochlorid has been used by Johnson and Murphy as the principal remedy in the treatment of 142 cases of endamebic dysentery. The authors have found its use, results and dangers somewhat analogous to those of salvarsan in syphilis. Two men died under treatment from peculiar and unusual conditions in no way connected with the disease from which they suffered; five other cases showed physical signs and symptoms which it is believed were due to emetin. In the two fatal cases there was (1) inability to swallow after food had reached the esophagus, (2) hepatization of the lungs and (3) rapid and uncontrolled action of the heart. Both patients showed, at first, a general motor weakness affecting particularly the muscles of the back of the neck, with a tendency for the head to fall forward, later a difficulty in swallowing, and finally a pneumonia of lobar type. One case showed decided cardiac signs, possibly attributable to failure of vagus control. These cases were treated with emetin, particularly during the acute stage of the disease, and received in all 23½ and 25 grains each. In the five cases mentioned the untoward symptoms were somewhat similar and disappeared promptly when medication was stopped.

The authors' present method of administering emetin in cases of endamebic dysentery is as follows: ⅓ grain daily, increasing ⅓ grain per day until 1 grain is given, continued until 8 grains have been given. With the emetin, bismuth subnitras in large doses, is given. For the succeeding period of ten days colonic irrigations of 1:1,000 quinin solution are given once or twice daily. If the stool is still positive a subsequent course of emetin, 1 grain daily, is given for three days. By this method of treatment the patient receives 11 grains, which is less than the single lethal dose stated by Sir Leonard Rodgers. This procedure usually suffices to free the stool from ameba and cysts. There are occasional cases which will require a third course, which is not instituted until after a sufficient lapse of time and not then, if asthenia or special contraindications exist, that is, motor weakness, irregular heart action, nervous exhaustion or irritative diarrhea. In view of the experiences the authors advise a very careful and watchful course in the use of emetin, in protracted cases especially.

### New Jersey Medical Society Journal, Orange

*January, XIV, No. 1*

112 **Protective Inoculation by Use of Vaccines and Serums.** G. F. Leonard, New Brunswick.—p. 1.
113 **Poliomyelitis.** D. Elliott, Newark.—p. 5.
114 **Prophylaxis and Treatment of Postanesthetic Vomiting.** C. J. Larkey, Bayonne.—p. 8.
115 **Use of Iodin in Obstetrics.** M. E. Swiney, Bayonne.—p. 10.

### New Orleans Medical and Surgical Journal

*January, LXIX, No. 7*

116 **Incontinence of Urine in Women.** M. J. Gelpi, New Orleans.—p. 486.
117 **Large Typhoid Abscess; Report of Case.** J. M. Perret, New Orleans.—p. 492.
118 **Tubo-Uterine Rupture at Fourth Month of Gestation.** P. Michinard, New Orleans.—p. 496.
119 *Bacterial Cultures of Human Spleens Removed by Surgical Operation. A. W. Sellards, Boston.—p. 502.
120 **Occurrence of Parasite in Tick.** S. B. Wolbach, Boston.—p. 519.

119. **Bacterial Cultures of Human Spleens Removed by Surgical Operation.**—Bacterial cultures were made by Sellards of human spleens removed for surgical purposes in ten cases. The cultures from four of these spleens remained sterile. In three instances, a micrococcus was obtained and in three other cases an anaerobic bacillus developed. The anaerobic bacillus in its morphology, in its cultural characteristics and in its serologic reactions resembled very closely the bacillus isolated by Plotz in typhus. The weight of evidence indicates that this group of organisms represents parasitic but nonpathogenic flora of the human body. There is not sufficient evidence to ascribe a specific etiologic rôle to members of this group of anaerobic bacilli in either typhus or in pernicious anemia.

### New York Medical Journal

*January 6, CV, No. 1*

121 **Bronchial Asthma.** W. Frendenthal, New York.—p. 1.
122 **Treatment of Hypertension and Complicating Conditions.** W. B. Snow, New York.—p. 5.
123 **Pathology of Poliomyelitis and Its Relation to Virus.** G. E. Price, Philadelphia.—p. 9.
124 **Rollier Treatment of Tuberculosis.** C. L. Hyde and H. Lo Grasso, Perrysburg.—p. 11.
125 **Borderline Cases of Upper Abdomen.** H. Weinstein, New York.—p. 18.
126 **Treatment of Stitch Suppuration by Bismuth Paste.** A. R. Hollender, Chicago.—p. 20.
127 **Infiltration Anesthesia for Tonsillectomy, Together with Employment of Normal Saline Solution.** M. S. Ersner, Philadelphia.—p. 21.
128 **New and Powerful Galactogogue (Autotherapy).** C. H. Duncan, New York.—p. 22.

### Ohio State Medical Journal, Columbus

*January, XIII, No. 1*

129 **Surgical Treatment of Exophthalmic Goiter.** G. W. Crile, Cleveland.—p. 7.
130 **Medical Treatment of Exophthalmic Goiter.** A. Crotti, Columbus.—p. 8.
131 **Exophthalmic Goiter.** J. P. Sawyer, Cleveland.—p. 11.
132 **Deductions Drawn from Use of Salvarsan in Treatment of Syphilis.** H. N. Cole, Cleveland.—p. 16.
133 **Traumatic Hysteria, Report of Cases.** W. F. Bay, Columbus.—p. 18.
134 **Ductless Gland Therapy and Dermatology.** E. D. Tucker, Toledo.—p. 21.

### South Carolina Medical Association Journal, Greenville

*December, 1916, XII, No. 12*

135 **Abdominal Cesarean Section, Indications, Technic; Report of Case.** J. R. Young, Anderson.—p. 365.
136 **Tuberculous Patients Unsuited for Sanatoriums.** E. Cooper, Columbia.—p. 372.
137 **State's Duty to Feebleminded.** A. B. Patterson, Barnwell.—p. 374.
138 **General Paresis; Diagnosis and Treatment.** J. F. Munnerlyn, Columbia.—p. 376.
139 **Classification of Pathologic Hearts.** J. E. Edwards, Spartanburg.—p. 380.

### West Virginia Medical Journal, Huntington

*September, 1916, XI, No. 2*

140 **Stones in Gallbladder.** F. S. Mathews, New York.—p. 73.
141 **Sanitation on Cabin Creek, W. Va., After Flood, Aug. 9, 1916.** E. S. Tisdale.—p. 89.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Annals of Tropical Medicine and Parasitology, Liverpool

*December, 1916, X, No. 3*

1 Fourth Variety of Trichonocardiasis; Cultivation of Nocardia Tenuis (Castellani, 1911). J. W. S. Macfie.—p. 283.
2 Urinary Amebiasis. J. W. S. Macfie.—p. 291.
3 Morphology of Certain Spirochetes of Man and Other Animals. J. W. S. Macfie.—p. 305.
4 Studies in Blackwater Fever. Importance of Furnishing Statistics in Connection with Cases. J. W. W. Stephens.—p. 345.

### British Medical Journal, London

*December 23, 1916, II, No. 2921*

5 *Influence of Antiseptics on Activities of Leukocytes and Healing of Wounds. C. J. Bond.—p. 861.
6 Dysentery Carriers. A. M. Kennedy and D. D. Rosewarne.—p. 864.
7 Case of Amebic Abscess of Liver Occurring Twenty Years after Original Attack of Dysentery. G. C. Low.—p. 867.
8 Fulminating Type of Cerebrospinal Fever. P. W. Maclagan and W. E. Cooke.—p. 869.
9 Treatment of Trench Feet. A. S. Gillett.—p. 870.
10 *Home-Made Bread Substitutes for Diabetic Patients. R. T. Williamson.—p. 870.

5. **Influence of Antiseptics on Leukocytes.**—If it be true that some part (how large a part is at present unknown) of the spread of infection in wounds is due to a breakdown in the defensive mechanism of phagocytosis, of which return immigration is only one phase; if, in other words, a certain number of pus cells in infected wounds reenter the circulation or the tissues carrying ingested but still living organisms with them, and if a certain proportion of the latent infection in sinus cases and the recrudescent sepsis which breaks out in healed wounds is due to this same cause, then, says Bond, any method of wound treatment to be successful must deal with the problem of the return immigration of germ laden phagocytes. If antiseptic solutions when applied to wounds are sufficiently strong to kill the phagocytes and their cargoes, and so prevent their reentrance into the tissues they will also inhibit emigration and phagocytosis. The irrigation of a wound with normal saline favors emigration and ingestion, but it does not prevent return immigration. The application of hypertonic saline, on the other hand, may prevent return immigration by killing the leukocytes, but it also checks emigration and phagocytosis.

Bond's observations suggest that return immigration of leukocytes is intimately associated with the spread of infection and recrudescent sepsis in wounds. The spread of infection is due to a breakdown in one or more of the factors on which phagocytosis depends. Either the wandering phagocytes do not emigrate into the invaded area in sufficient numbers, or, having emigrated, they do not ingest the organisms, or the breakdown of the defensive mechanism may occur at a later stage. The phagocytes may emigrate and successfully intern the invading organisms, but they may fail to digest them, or things may go wrong during return immigration. The organisms may be liberated by the leukocytes while still alive, just as the pigment granules may be liberated, and they may retain sufficient virulence to originate a recrudescent infection in a new area. It is quite likely, says Bond, that some part of the autointoxication which attends the too free movement of infected limbs may depend on a liberation of ingested organisms brought about by injury to germ containing leukocytes rather than to a mechanical pumping of the organisms or their toxins into the tissues.

10. **Home-Made Bread Substitutes for Diabetic Patients.**—Williamson uses a soluble casein containing a small percentage of phosphate and gluten, coconut and almond flour,

### Glasgow Medical Journal

*December, 1916, LXXXVI, No. 6*

11 Outdoor Occupations for Tuberculous Cases. J. W. Allan.—p. 321.
12 *Advanced Pulmonary Tuberculosis. W. T. G. Davidson.—p. 330.
13 Liver Abscess Among Soldiers. A. G. Faulds.—p. 337.

12. **Tuberculin in Treatment of Advanced Tuberculosis.**—Davidson's experience has been that tuberculin has done good even in cases of fairly advanced phthisis, though the number of cases treated has not been sufficient to make the evidence conclusive. He does not claim to have cured any patient of the disease with it; but he has treated about fifty patients, specially selected, but all with advanced lesions. These patients put on weight, their general health improved, immunity was brought about from toxemic symptoms, cough became very slight and the sputum scanty, and in some cases both entirely disappeared. The lesion in the lungs was not so marked, in several cases the local signs had practically disappeared, and the patients were dismissed very much improved.

New tuberculin B. E. was found to give the most satisfactory results. The initial dose was 0.3 c.c. of a dilution of one in a million, and a dose was administered biweekly unless there was some contraindication, each subsequent dose being increased by 0.3 c.c. Whenever the dose exceeded 1 c.c. a dilution of the fluid ten times less (one in 100,000) was used. For example, the first four doses would be 0.3 c.c., 0.6 c.c., 0.9 c.c. of a dilution of one in a million, the next dose, instead of being 1.2 c.c. of the same dilution, would be 0.2 c.c. of a dilution of one in 100,000, and so on, until the undiluted tuberculin was given, when the increase of the dose each time was 0.1 c.c. The treatment lasted for about three months, and came to a conclusion after 1 c.c. of pure tuberculin was given. But it is evident that the treatment should be kept up for a longer period, since many cases which had improved under its influence, and had kept well for some time afterward, tended to get worse again when away from the influence of the tuberculin.

### Lancet, London

*December 23, 1916, II, No. 4869*

14 *Antiseptic Treatment of Wounds. I. Feldman and A. J. Walton.—p. 1043.
15 Cerebral Associations of Raynaud's Disease. H. J. Norman.—p. 1049.
16 Treatment of Lamblia Infections. C. Dobell and G. C. Low.—p. 1053.
17 Fulminating Type of Cerebrospinal Fever; Pathology and Cause of Death. P. W. Maclagan and W. E. Cooke.—p. 1054.
18 Importance of Getting Pregnant Woman Under Medical Supervision and Affording Her Necessary Treatment. A. Routh.—p. 1055.
19 Two Fatal Cases of Metastatic Gas Gangrene. K. Taylor.—p. 1057.

14. **Antiseptic Treatment of Wounds.**—The antiseptic advocated by Feldman and Walton is prepared by rubbing together in a mortar crystals of pure phenol and camphor in equal parts by weight—a perfectly clean sweet smelling liquid being thus obtained. As is the case when using any other application, it is primarily essential to provide adequate drainage. When seen in a relatively early stage the wound, if deep or punctured, should be opened under general anesthesia so as to eliminate, so far as possible, any pockets in the tissues and all foreign bodies, loose pieces of bone, or necrotic tissue should be removed. When the wound has been freely opened sufficient of the liquid is poured in to reach the whole surface of the tissues. In large wounds as much as 1 or 2 fluidounces may be required, although as a general rule one or more fluidrams are sufficient. Drainage tubes are inserted as required and packed round with gauze soaked in the fluid. On the surface dry gauze is applied. It is only necessary to change the dressing every forty-eight hours, when a few drops of the fluid are poured down the tube and fresh soaked gauze applied to the raw surfaces. When the treatment is commenced some days or weeks after the infliction of the wound it is again necessary to open up all sinuses and pockets so that the fluid may reach all the septic areas, and if necessary tubes should be inserted so that free drainage is established. The fluid is then used in the same manner as previously. It is noteworthy that the fluid can be handled freely without doing any harm to the skin, but if left for a prolonged period in contact with patient's skin around the wound a certain amount of burning may be caused; for this reason surface dressings should be formed of dry gauze. It is rarely necessary to smear the surrounding skin with sterilized petrolatum.

It is claimed for the method that it overcomes sepsis more rapidly than other methods. With its use amputations are

much less frequent. It diminishes pain rather than increases it, as is so often the case with other dressings. The dressing requires to be changed only at long intervals. Its use is associated with no danger. The amount of work in the ward is greatly diminished. It is most suitable to the conditions of modern warfare and can be easily applied to cases that have to travel.

### Medical Journal of Australia, Sydney

*November 25, 1916, II, No. 22*

20 Account of Hospital Ship Karoola. G. Craig.—p. 447.
21 Rupture of Bladder. C. E. Todd.—p. 453.
22 Case of Extraperitoneal Rupture of Bladder. H. Rischbieth.—p. 454.

*December 2, 1916, No. 23*

23 Thyroid and Internal Secretion. J. C. Verco.—p. 465.
24 Seven Cases of Labyrinthitis, with Six Operations on Labyrinth. M. A. Reid and M. E. Lynch.—p. 470.
25 Case of Acute Cerebrospinal Meningitis. K. Inglis.—p. 474.

### Sei-I-Kwai Medical Journal, Tokyo

*December, 1916, XXXV, No. 12, pp. 73-78*

26 Relation Between Diabetes Mellitus and Albuminuria. S. Iwai.—p. 73. To be continued.

### Archives de Médecine des Enfants, Paris

*November, 1916, XIX, No. 11, pp. 561-616*

27 *Dyspeptic Diarrhea in Children. C. Blanc (Lausanne).—p. 561.
28 *Syphilitic Meningitis and Meningeal Reactions in Syphilitics. M. Lavergne.—p. 579.
29 Recovery from Tetanus under Intravenous Serotherapy. P. Nobécourt and E. Peyre.—p. 588.
30 Milk as Vehicle of Infection of Malta Fever. J. Comby.—p. 597.

27. **Dyspeptic Diarrhea.**—Blanc emphasizes that this disturbance is the result of a disproportion between the food that has to be digested and the juices which are to digest them. Consequently each of these factors must be investigated separately. The food may be at fault or one or more of the digestive juices may be inadequate. The clinical picture is described in detail of nervous functional and dyspeptic diarrheas, and the means of investigation in each, especially when the diarrhea is due to insufficiency on the part of the pancreas. Emaciation is an important sign of the latter and also anemia, as the pancreas secretes hemolysins when it is becoming atrophied. There is liable also to be hint of bronzing, and colic on the left side is a characteristic feature. The stools are whitish and oily, the palmitin coagulates *en masse* like tallow. There is also much residue of undigested meat fibers. Steatorrhea and creatorrhea may occur in normal conditions when fat and meats are eaten in undue amounts.

Among the useful tests are alimentary glycosuria, and alimentary steatorrhea and creatorrhea. If the pancreas functioning is defective, Blanc advises to restrict the intake of meat and of fats, increasing the proportion of starch, which is digested well in such cases, and stimulating secretion in the pancreas by giving hydrochloric acid and pepsin, which aid in the formation of trypsin. To stimulate production of steapsin, he gives pills of bile between meals, as the biliary acids stimulate secretion of steapsin. Intestinal diarrhea from fermentations does not affect the general health as a rule, but neurasthenia is common. The stools reveal the acid dyspepsia. The fermentation irritates the bowels and they protect themselves by mucous secretions. The diet should be modified into an antidiabetic diet, meat, cream, fat, butter, rice and potatoes. Casein may be given and the bowels disinfected.

28. **Meningeal Reactions in Syphilitics.**—Lavergne has had four cases of meningeal symptoms in children for which neither tuberculous nor cerebrospinal meningitis was responsible. In two they were a manifestation of inherited syphilis, in the others the meningeal reaction occurred in the course of an acute infectious disease. All the children recovered completely. None of them had ever presented signs or symptoms otherwise that might have suggested an inherited taint, but the Wassermann reaction was found positive and under mercurial treatment recovery was soon complete. Whenever meningeal reactions are accompanied by an appreciable lymphocytosis, the Wassermann test should be applied without delay.

### Bulletin de l'Académie de Médecine, Paris

*1916, LXXV, No. 6, pp. 131-154*

31 Remote Results of Anastomosis between Intestines and Biliary Apparatus. (Résultats éloignés des anastomoses entéro-biliaires.) P. Bazy.—p. 135.
32 Wine from Psychologic Standpoint. C. Fiessinger.—p. 141.
33 Preparation of Catgut. Goris.—p. 148.
34 Direct Laryngoscopy, Tracheoscopy and Esophagoscopy in Specialist Service for the Wounded. Guisez.—p. 152.

### Paris Médical

*December 16, 1916, VI, No. 51, pp. 529-544*

35 Treatment of Skull Wounds. (Traitement des plaies du crâne dans les ambulances de l'avant.) A. Schwartz.—p. 529.
36 *Curative Value of Serotherapy in Tetanus. (De la valeur curative du sérum antitétanique.) E. Merle.—p. 533.
37 *Anastomosis of Intestines without Opening the Lumen. (Nouveau procédé d'entérectomie et d'entéro-anastomose aseptiques.) Gudin.—p. 539.
38 Suture of Wound in Heart. (Plaie du cœur traitée par la suture, avec survie de neuf heures, chez un blessé atteint de plaies multiples.) Ertaud.—p. 541.

36. **Antitetanus Serum in Treatment of Tetanus.**—Merle has been making extensive experiments which have demonstrated anew the special affinity of the nerve cells for the tetanus toxin, and also that they are able to neutralize a certain proportion of the toxin. The toxin arriving in amounts greater than the cells can neutralize is adsorbed by the cells and held so firm by them that it does not feel the influence of any antitoxin injected. This seems to be able to act only on the toxin left in the blood stream, but Roux and Borrel, by injecting the antitoxin directly into the brain of guinea-pigs, were able to neutralize the toxin already fastened in the nerve cells. The application of similar measures in the clinic has not given the anticipated results, probably, Merle says, because the antitoxin has not been applied directly to the cells in sufficient quantities. He cites thirty-seven cases reported by various writers of recovery from tetanus under intraspinal injections of large doses of antitetanus serum. They encourage further trials of the method, injecting the antiserum into the spinal canal, and rectum, intravenously and subcutaneously, to act on the toxin by all methods of approach. A transient aggravation of the symptoms may follow.

37. **Entero-Anastomosis Without Exposing the Lumen.**—The bowel is crushed with clamps on each side of the portion to be resected. With small forceps the bowel is seized at the edge of each of the crushed segments. The intervening segment and its mesentery are cut out and the two small forceps are brought together and the stumps are sutured together, the stitches including the forceps. The forceps are then withdrawn and a grooved sound is introduced in place of the forceps and is worked in until it has spread apart the tissues crushed together by the clamp. This is done for each stump, loosening apart the mucosa and muscular walls of the bowel, and thus rendering the bowel permeable. It is claimed that this method ensures hemostasis while it avoids the operations in two sittings, and the lumen is not opened until the suture is complete. Gudin's clinical experience with this method has been extremely favorable. He gives illustrations of the various steps of the method for entero-anastomosis, and also an illustrated description of the same principle applied to gastro-enterostomy.

### Presse Médicale, Paris

*December 14, 1916, XXIV, No. 69, pp. 569-576*

39 *Nature and Serotherapy of Infectious Hemorrhagic Jaundice. (La spirochétose ictérohémorrhagique.) L. Martin and A. Pettit.—p. 569.
40 *Experimental Research on Section and Restoration of Nerves in Dogs. E. Duroux and A. Couvreur.—p. 572.

39. **Hemorrhagic Jaundice.**—Martin and Pettit give a complete review of the present status of what they call icterohemorrhagic spirochetosis, including an account of their own research, and clinical experiences, reproducing a typical fever chart, and describing the results of inoculation of guinea-pigs with blood or urine from patients. The clinical case reported was a laboratory infection, Dr. G. L., who has been doing this kind of work for years, having been in charge of the glanders service for ten years. He inoculated guinea-pigs at

a two days' interval and six or seven days later developed a severe typhoid-like condition accompanied by intense jaundice. The disease reached its height in a week and guinea-pigs inoculated died of spirochetosis in five days. Improvement became evident by the twelfth day and he was able to get up the eighteenth day, but he was unable to start to work for three or four months. The case shows that the incubation is one week. Infection seems to have occurred when the virulence of the virus had been enhanced by the passage through guinea-pigs. In the second case the disease was mild but confirmed by inoculation of guinea-pigs. Martin and Pettit have produced now from the horse an antiserum which has proved its efficacy conclusively on guinea-pigs, even at the third day of the infection otherwise fatal in six days. They say that every infectious jaundice should be examined for the Inada-Ido spirochete, of which they give some illustrations.

40. **Operations on Nerves in Dogs.**—Dogs seem to stand the severing of even large nerves much better than man. But even in dogs the immediate restoration of function is illusory. The peripheral end does not recuperate its functions until it has been penetrated by the fibers from the central stump. Suture and possibly grafting give best results. Compression from proliferation of connective tissue must of course always be corrected.

### Correspondenz-Blatt für Schweizer Aerzte, Basel

*December 16, 1916, XLVI, No. 51, pp. 1697-1728*

41 *Welfare Work for School Children with Ear Disease. (Fürsorgebestrebungen für ohrenkranke Schulkinder.) O. Laubi.—p. 1697.
42 Utilizing the Muscular Force in Stump of the Arm to Control Functioning of Artificial Hand. (Un nouvel appareil pour les mouvements volontaires de la main artificielle.) N. Fialko.—p. 1703.
43 *Regular Daily and Yearly Fluctuations in the Body Temperature. (Bemerkungen über die regelmässigen täglichen und jährlichen Schwankungen der Körperwärme und ihre Herkunft.) R. Ammann.—p. 1710.

41. **Welfare Work for Children with Ear Disease.**—Laubi states that for twenty-two years he has examined the ears of the children entering school for the first time at Zurich. As the child's aptitude for profiting by the school instruction depends on the functioning of the eye and ear, it is to be deplored that examination of the eye and ear is not the rule everywhere on entering school. At Zurich, the school inspector or teacher examines the children first and all who cannot hear the whispered voice at 8 meters are referred to an ear specialist. During the twenty-one years, 1894-1914, from 4.8 to 21.6 per cent. were thus found abnormal, a total of 6,785 out of 62,738 children examined in these years, namely, 11.8 per cent. of all the boys and 9.8 per cent. of the girls. (Nager found 40 per cent. at Lucerne, and Bezold has reported 25.8 per cent., Ostmann 28.4 per cent., and Denker 23.3 per cent., who were unable to hear a whisper at 8 meters.) A circular is sent the parents giving the location and hours of the policlinic where ears are treated, and the children are obliged to bring a certificate to the effect that they have applied for treatment.

The very deaf are given a desk near the teacher, the best ear turned to the teacher, and each child is given a "protector," an intelligent child who sits near and explains to him what he fails to hear. Ear trumpet devices are recommended for those who cannot otherwise hear their own voice, mainly so they can listen to and modulate their own voices. The curved hand to promote hearing is also advised. Lip reading is essential, and Laubi recommends Gutzmann's treatise on this subject (1912). A special school or classes are advisable for children who are unable to hear a whisper at 2 meters. The teachers should be trained in the care of deafmutism, and Laubi deplores that there is no state examination in Switzerland, as there is in Germany, that guarantees special training for welfare work among the deaf. He urges the organization of a school with three grades for the children with defective hearing, with special training to improve vision, and with extra manual training work. The school might also, he says, include the children with eyesight requiring much correction. The expense of such a school renders it impracticable at Zurich at present, but there is already valuable work being done in this line in five cities by a private organization, the Hephatavereine, which assembles the younger children and trains them in hearing exercises, and in the use of the voice, with gymnastics and games.

43. **Regular Fluctuations of the Temperature.**—Ammann reviews what has been written on this subject, citing the findings on pigeons, monkeys and other animals and on man, in regard to the diurnal and nocturnal variations in the normal temperature. He then tabulates the findings over a whole year in a healthy person with regular habits, not doing heavy work. The temperature was taken on rising in the morning and just before going to bed, the thermometer held in the mouth for fifteen minutes each time. There was an average daily variation and also an annual, the body temperature gradually reaching its highest point in July and lowest in November, practically uninfluenced by the atmospheric temperature. The fluctuation was 0.43 of a centigrade degree. Ammann theorizes that the electricity in the air is responsible for the daily and yearly fluctuations.

### Medizinische Klinik, Berlin

*November 19, 1916, XII, No. 47, pp. 1223-1248*

44 *Venesection plus Autoserotherapy. (Eigenserum und Aderlass—Lehre und Anwendung.) B. Spiethoff.—p. 1223. To be concluded.
45 *To Expel the Blood in Operating on the Limbs. (Kurze Bemerkung zur Blutleere bei Operationen von den Extremitäten.) Ritter.—p. 1228.
46 *Salvarsan in Treatment of Pernicious Anemia. R. Lämpe.—p. 1228.
47 The Sago-Like Lumps in Dysenteric Stools. (Ueber die sagokornähnlichen Klümpchen in den Ruhrentleerungen.) B. Ullmann.—p. 1230.
48 Case of Echinococcus Disease of the Skin. (Fall von Cysticercus cellulosae der Haut.) F. Fischl.—p. 1233.
49 *Neurasthenia of the Heart. (Zur Symptomatik der Neurasthenia cordis.) K. Singer.—p. 1233.
50 Folding Operating Table. (Ein Feldoperationstisch.) O. Loewe.—p. 1235.
51 Indications for Obstetric Operations by the General Practitioner. (Zur Indikationsstellung bei den geburtshilflichen Operationen des praktischen Arztes.) H. Walther.—p. 1236. To be continued.

44. **Venesection Plus Autoserotherapy.**—Spiethoff has apparently established that equally favorable results can be realized with the patient's own serum as with alien serotherapy. The benefit does not depend on supplying certain lacking elements but on a broader principle, which includes the individual's own serum. He here reports his favorable experiences with the method in a variety of skin diseases and acute general infectious diseases. He draws from 50 to 100 c.c. of blood and reinjects into a vein the serum from this blood after coagulation. The procedure is repeated on alternate days at first and then twice a week. Or the venesection can be smaller, and 5 c.c. injected intravenously every day. The dosage is extremely important. He has never witnessed with this form of serotherapy anything like the phenomena of hypersusceptibility sometimes noted with foreign serum, but there is usually a transient general and a focal reaction. Promising experiences are related with rebellious urticaria, eczema, pemphigus, scalp disease and gangrenous ulcers. Pruritus at all ages offers an exceptionally grateful field for this technic. If the favorable effect diminishes, he advises changing to Ringer's solution, injecting 300 c.c. two or three times a week, intravenously or subcutaneously. Good results were obtained in the complications of gonorrhea; acute febrile swelling of the epididymis and prostate rapidly retrogressed in his experience.

45. **To Expel the Blood from the Limb.**—Ritter commends the principle of Trendelenburg's "spit" (*Spiess*) for checking the flow of blood at the hip and shoulder. When this special instrument is not available, the same result can be obtained with long forceps or scissors. He has never had the constricting rubber tube slip. He does not describe the technic.

46. **Salvarsan in Pernicious Anemia.**—Lämpe declares that he has never witnessed such pronounced and durable improvement from any other measures in pernicious anemia as he realized under salvarsan in the three cases described. The patients were women of 40, 45 and 50, and the anemia was in a grave stage, the hemoglobin 30 per cent., reds 1,400,000, in the first case, with syncopes and hourly vomiting. Under

six small doses of salvarsan—a total of 0.65 gm. in five weeks—the patient rapidly improved and in four months the hemoglobin had risen to 70 per cent. and the reds to 4,400,000. She felt quite well for seven months, but then symptoms of pernicious anemia returned and as the heart was weak no attempt to give salvarsan again was made. Necropsy confirmed the diagnosis and the fatty degeneration of the heart. Equally favorable results were obtained in the two other cases, the reds numbered 1,200,000 and 1,000,000 and both patients were restored to clinically perfect health and endurance. Syphilis and helminths could be excluded in all three cases, and under salvarsan the morphologic blood findings returned to normal. A permanent cure can scarcely be expected, but the last two patients are still in good health. The six or seven doses were 0.05 to 0.15 gm. each, intravenously in the course of eight or fifteen weeks, and they were borne well as a rule.

49. **Nervous Weakness of the Heart.**—Singer calls attention to three tests which may reveal an organic basis for the apparently exclusively subjective disturbances. One is an especially sensitive area near the heart, a hyperesthetic zone, egg shaped or elliptic, near or including the left nipple. When the needle is drawn lightly over the right breast and then over the left breast, the patient shrinks and exclaims when this tender area is reached. He gives illustrations of the area involved in eight cases. The second test is what he calls the "vagus pulse." The anomaly in the vagus action is shown most instructively by the difference in the pulse during inspiration and expiration, and between the pulse lying down and sitting up. The pulse also grows slower during the "squatting test"; the man bends his knees several times and then stays in the squatting position, the head bent forward, while the pulse is counted. It was materially retarded in the heart-neurosis cases, dropping from $6 \times 21$ to $6 \times 13$; in one case from $6 \times 25$ during running to $6 \times 12$ while squatting. The retardation is briefly transient. In twenty healthy men there was no change in the pulse except in four cases, and in these it lasted only for two or three beats. But it is common in neuropaths and neurasthenics, even when there is no appreciable heart neurosis.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*December 7, 1916, XXXVII, No. 98, pp. 1537-1552*

52 *The Various Forms of Purpura. (Morbo di Werlhoff e trombopenia essenziale.) G. Matteucci.—p. 1539.

*December 10, No. 99, pp. 1553-1568*

53 *Unusual Localizations of Paratyphoid B Infection. A. Florenzano. —p. 1553.

52. **Werlhof's Disease and Essential Deficiency in Thrombogen.**—Matteucci relates that his analysis of cases of purpura has shown that there are nine different varieties of this affection and that certain varieties are amenable to horse serum, while others are not modified by this but are corrected by administration of an extract of blood platelets. He lists them as simple purpura, Schönlein's rheumatoid purpura, Majocchi's type with telangiectasis, Landouzy's infectious type, Henoch's fulminating form, Werlhof's disease, essential thrombopeny (Frank) and scorbutic and chronic purpura. In two cases described in detail the difference between typical Werlhof's disease and essential thrombopeny is well brought out, and the benefit from horse serum in the first type and from extract of blood platelets in the second. The patients were a boy of 16 and girl of 12. Examination of the blood classifies the cases. In all varieties, epinephrin is liable to prove a valuable aid. It was not needed in the first case, the horse serum answering the purpose alone. The varieties of purpura are all of two types, those with and those without normal conditions in the blood platelets.

53. **Unusual Localizations of Paratyphoid Infection.**—Florenzano remarks that paratyphoid B infection is always a septicemia, but the main focus of infection may be in various organs in different cases. The disease may run a mild course in three or four days or it may last for three months with remittent or intermittent fever. In a case described in detail, the localization was in the pleura, and the symptoms from this had preceded the paratyphoid septicemia. The disease ran its course through three months, the toxi-infectious symptoms recurring in three attacks. Tuberculin reactions were negative, and great benefit was derived each time from injection into the pleural cavity of an antiparatyphoid vaccine. In a second case the paratyphoid infection was installed predominantly in the colon, and the symptoms suggested acute appendicitis in the course of the paratyphoid, but it apparently subsided and the patient recovered under medical measures alone. In a third case the symptoms were those of acute appendicitis alone, with constipation, no diarrhea as in other cases, and there had been several days of malaise with fever and chills, but nothing to suggest other intestinal trouble. In still another case the paratyphoid B septicemia induced a hemorrhagic set of symptoms and then seemed to subside, the temperature becoming normal and the patient feeling well for a day; then a severe typical paratyphoid fever set in, with fatal hemorrhage in the bowel. One man of 39 had a combination of typhoid and paratyphoid, but left the hospital in good condition after a two months' stay.

### Policlinico, Rome

*December 17, 1916, XXIII, No. 51, pp. 1489-1522*

54 First Treatment of War Wounds of the Joints. (La cura immediata delle ferite articolari in chirurgia di guerra.) R. Mosti. —p. 1489.

55 Gaseous Infection of War Wounds. F. Bartoli.—p. 1493.

56 Case of Hemorrhagic Septicemia with Death from Cerebral Hemorrhage. B. Frattini.—p. 1495.

57 Recovery from Tetanus under Subcutaneous Injections of Phenol. (Caso di tetano guarito con la cura Baccelli.) G. Merolillo.—p. 1497.

### Riforma Medica, Naples

*September 11, 1916, XXXII, No. 37, pp. 1005-1032*

58 Annular Scotoma from Occipital War Wounds. G. A. Pari.—p. 1005.

59 *Total Nitrogen, Cholin and Cholesterin in the Cerebrospinal Fluid in Various Pathologic Conditions of the Central Nervous System. C. Cantieri.—p. 1009. Concluded.

*September 18, No. 38, pp. 1033-1060*

60 *Minor Long Continued Fevers and Nervous Fevers. (Le piccole febbri nella clinica e le febbri nervose.) A. Rossi.—p. 1033.

*September 25, No. 39, pp. 1061-1088*

61 Addison Syndrome in an Incomplete Form of Recklinghausen's Disease. C. V. Lutati.—p. 1061.

59. **The Nitrogen, Cholin and Cholesterin Content of the Cerebrospinal Fluid.**—Cantieri gives the detailed findings in regard to the total nitrogen, the cholin and the cholesterin in the lumbar puncture fluid from thirty-one patients with different diseases. There was no regularity to be detected in the cholin and cholesterin content, but the nitrogen content showed an increase in all disturbances of a toxic infectious character affecting the brain, or in disturbance from arteriosclerosis. The nitrogen content was also liable to be high in psychoses and epilepsy, as well as with uremic derangement, but with brain tumors there was no increase. An extensive bibliography is appended.

60. **Minor Long Continued Fevers.**—In a few specimen cases reported, the patients were women in the thirties, a young man and some children. Each for a year or two or more had had weeks of depression and slightly abnormal rise in temperature over long periods, for which absolutely no cause could be discovered. Rossi comes to the conclusion that the explanation must be some upset in the innervation of the glands with an internal secretion. There was nothing to suggest hysteria in any of the cases, but the general nutritional processes seemed below par and functional nervous disturbances of various kinds were manifest.

### Cronica Medica, Lima, Peru

*November, 1916, XXXIII, No. 641, pp. 377-420*

62 *Peruvian Verruga. (Algunas consideraciones sobre la nueva teoria dualista de la enfermedad de Carrion.) J. Arce.—p. 377.

63 *Postoperative Acute Dilatation of the Stomach. (La dilatacion aguda del estomago con oclusion duodenal postoperatoria.) G. V. Riestra.—p. 391.

64 Present Status of Treatment of Hemoptysis. (Hemoptisis tuberculosa.) E. Odriozola.—p. 399.

65 Ephedra Root in Treatment of Certain Affections of the Urinary Apparatus. (La Ephedra Americana en el tratamiento de algunas afecciones de las vias urinarias.) E. Escomel.—p. 403.

*December, No. 642, pp. 421-480*

66 Cystic Dilatation of the Bile Ducts from Stenosis of Pancreatic Segment. (Dilatacion quistica del hepatocoledoco por estenosis del segmento pancreatico.) F. Wieland and F. Quesada.—p. 421.

67 *Pathologic Anatomy of Dermal Leishmaniasis. (Anatomia patologica de las Leishmaniasis dermicas.) G. Almenara.—p. 429.

62. **Identity of Peruvian Verruga and Oroya Fever.**—Arce protests against the conclusions of the report of the Harvard commission on Peruvian verruga. (It was published in The Journal, Nov. 8, 1913, p. 1713). The commission decided that Peruvian verruga and Oroya fever are separate diseases. The fact that the same germs were found in both at times, they ascribed to mixed infection. But Arce's long years of practice in Peru have confirmed him more and more in the view that they are the benign and the malignant forms of one and the same disease. Arce is professor of tropical medicine in the University of Lima, and he presents an array of arguments to invalidate the commission's conclusions. Different persons react differently according to their defensive powers, and the germs may differ; they may be represented by two different species or varieties as we know to be the case with the malaria germ. The Harvard commission fully established the inoculability from man to man of Peruvian verruga, thus confirming Carrion's work. Arce asserts in conclusion that there is no proof as to the zooparasitic nature of the inclusions in the red corpuscles which they call *Bartonia bacilliformis*. Arce exclaims "How can we explain these and similar mistakes made by men of unquestionable scientific authority? We must acknowledge the great and multiple difficulties presented in the study of the infinitely small, and of all research in the field of the red blood corpuscle, this highly specialized minute organ, differentiated for its functional perfection, the elective affinity for and fixation of oxygen, but losing in the meanwhile two of the fundamental attributes of the cell: the nucleus and the power of reproduction. The physiopathology of the red corpuscles is still full of surprises, even under normal conditions, and the pathologic erythrocyte offers a broad field for discussion and erroneous conclusions."

63. **Postoperative Acute Dilatation of the Stomach.**—Valle Riestra reports four cases in Denegri's service and three in Carvallo's, all presenting the clinical picture of acute arteriomesenteric occlusion of the duodenum, with extreme dilatation of the stomach. Necropsy in the two fatal cases in the last group showed the typical compression of the duodenum by the mesenteric artery, owing to the acute dilatation of the stomach. The symptoms in these cases had been ascribed to a nonexistent peritonitis. In the others, the correct diagnosis was made in time, and lavage and the knee-chest posture brought the patients through. The cause seemed to be the anesthetic plus preceding weakness of the stomach, with or without a tendency to peritonitis, in all but one case. In this the acute dilatation developed under the physician's eyes almost entirely from swallowing air. This case teaches the necessity for being on the alert to prevent swallowing of air. The Trendelenburg position wards off the compression of the duodenum by the artery. It can be alternated with the knee-chest posture. Chambard insists that no fluid should be allowed by the mouth, and thirst should be combated by the rectum drop method.

67. **Dermal Leishmaniasis.**—Nearly the whole of this issue of the *Cronica Medica* is devoted to Almenara's illustrated study of the pathologic anatomy and histology of the various forms of superficial lesions caused by the leishmania. They can all be classed as the ulcerative or the tubercle types, the latter subject also to ulceration and crust production. The ulcerative type is called uta hembra, espundia, juccuya and tiacarañia; the tubercle type is called Oriental sore, uta macho and qcepo. In all the cases examined the leishmania was found in the tissues, free in the lymph and plasma or incorporated in the large mononuclear cells.

## Semana Medica, Buenos Aires

*October 5, 1916, XXIII, No. 40, pp. 331-358*

68 Vaccine Treatment of Eczema. (Terapeutica esencial del eczema.) N. S. Loizaga.—p. 331.

69 Symmetrical Gangrene of the Extremities. B. N. Calcagno.—p. 334.

70 *Dosage of Urea in Blood Serum. (Procédé rapide et exacte pour le dosage de l'urée dans le sérum sanguin.) F. Landolph.—p. 337.

71 *To Enlarge the Uterine Cervix for Emergency Evacuation of the Uterus. (Procedimientos que permiten vencer la resistencia opuesta por el cuello para el vaciamiento rapido del utero.) U. Fernandez.—p. 338.

72 Climatotherapy of Tuberculosis in Argentina. J. M. Escarlier and P. D. Galli.—p. 342.

73 Puncture Followed by Lavage in Diagnosis of Suppuration in the Maxillary Sinus. A. S. Lagomarsino.—p. 351.

74 Associated Reflexes. (Asociacion de reflejos—sinreflexias.) A Austregesilo and T. Mendez.—p. 352.

70. **Dosage of Urea in the Blood Serum.**—Landolph commends a method for this purpose which has proved simple and satisfactory in his hands. He mixes 2 c.c. of the serum with 2 c.c. water and from 1.5 to 2 c.c. of pure hydrochloric acid. This is brought to the boiling point for a moment and then filtered through a small filter with folds. It speedily filters through and the residue on the filter is washed with 4 c.c. water. The filtered fluid is treated directly with 20 or 30 c.c. of sodium hypobromite in the A. Robin ureometer. Practically all of the nitrogenous compounds capable of yielding nitrogen as urea are eliminated by this procedure which, he thinks, reduces the sources of error to the minimum.

71. **Emergency Dilatation of Uterine Cervix.**—Fernandez advocates incising the cervix rather than attempting to dilate it by mechanical means when the pregnancy is in the last half. He has thus operated on eight women with progressive tuberculosis or other cause requiring prompt evacuation of the uterus. The effects were excellent, and two of the women have passed since through a normal pregnancy.

## Siglo Medico, Madrid

*November 25, 1916, LXIII, No. 3285, pp. 753-768*

75 Recommendation, dated 1881, of a Mixture of Chlorinated Lime and Oxalic Acid for Treatment of Wounds. (Recuerdo de un antecedente.) C. M. Cortezo.—p. 754.

76 The Allen Fasting Treatment of Diabetes. Madinaveitia.—p. 755.

77 *Balneotherapy in Treatment of Disturbances from Hypertrophied Prostate. (Procedimiento para combatir los fenomenos del prostatismo.) M. Fernandez.—p. 759.

*December 2, 1916, No. 3286, pp. 769-784*

78 General Paresis Mistaken for Neurasthenia. (Un caso de diagnostico tardio.) C. Juarros.—p. 770.

79 The Chlorophyl Function. (Una nueva explicacion de la funcion clorofiliana.) V. de Castro.—p. 774.

77. **Balneotherapy for Enlarged Prostate.**—Fernandez reports the case of an elderly man with hypertrophied prostate causing intense reflex phenomena and polyuria, with pains before and after micturition, the desires returning every ten minutes on an average, rest at night being impossible. He had tried all kinds of measures but without avail. Fernandez then ordered baths the same as for uterine trouble, ten or twelve baths of ten minutes each, with the water at 45 C. (113 F.). After the first bath conditions were improved so much that two hours elapsed before micturition became necessary. By the end of sixteen days, the cure seemed complete, there being no further pains and the intervals approximately normal. This condition has persisted for the two months to date. (Fernandez gives no details of the technic for the baths *à la prostata*, except that they were taken "according to his method." He practices at Vichy Catalan, Spain.)

## Grèce Médicale, Athens

*1916, XVIII, No. 17-18, pp. 33-36. French Supplement of Iatriki Proodos*

80 Treatment of Congenital Dislocation of the Hip Joint. P. Nicolaidis.—p. 33. Concluded.

## Russkiy Vrach, Petrograd

*1916, XV, No. 42, pp. 985-1008*

81 War Wounds of the Chest. (Ognestr. raneniya grudnoi polosti i ikh liechenie.) A. L. Polienoff.—p. 985.

82 *The First Dentition and Abnormal Conditions Therein. (Zabluzhdenie prof. Heubner'a—Berlin—v voprosie o 1-m proriezivanii zubov u dietei.) A. O. Karnitzky.—p. 989. Commenced in No. 41. p. 962.

83 Injury of the Organ of Vision in War Wounds of the Head. Povrezhdeniya zritelnago organa pri ognestr. raneniakh golovi.) R. A. Katz.—p. 994. Continued.

84 *Periodic Leukocytosis. V. M. Sokoloff.—p. 997.

82. **The First Dentition.**—Karnitzky protests against Heubner's "energy" theory of the first dentition, saying that the same laws which regulate growth and development at all ages govern them at the first dentition as later. He has been making a special study of conditions affecting the first dentition, and tabulates data from 5,735 children, including 2,143 under 12 months old, all with affections of the respiratory apparatus, and also the data from 13,151 with digestive disturbances, including 4,249 under 6 months old and 3,402 from 6 to 12 months, and also a long list of apparently healthy children. Analysis of all this material confirms the frequency of pathologic conditions in infants, particularly between the sixth and twelfth months, when they begin to have more intercourse with the external world—just the months when the teeth are developing. Not only the well defined pathologic states, but possibly overlooked stomatitis, slight sore throat, slight grippe, a touch of typhoid, slight intermittent fever, lymphangitis in the neck, and so on. These conditions may affect the development of the teeth under the same laws as regulate conditions in adults. The formation of the teeth may be diverted from normal, and there may be pathologic local processes in the teeth, defects in the dentine or enamel, pulpitis and carious processes in the teeth after they cut through. In short, he declares, instead of theorizing about the first dentition, examine the babies' mouths, and much that is surprising will be learnt, when the children are below par in any way or the parents at the time of conception were not entirely healthy.

84. **Periodic Leukocytosis.**—Sokoloff adds another to the imposing array of works issued by Boldireff and his pupils, of the university of Kazan, on the periodical fluctuations in the functioning of the vital processes, especially of the digestive tract outside of digestion. This article gives tables of details of tests on thirty-three dogs to show the fluctuations in the leukocyte count during exercise and during rest. Changes of 6,000 in the figure were by no means uncommon, the higher figures being encountered during exercise and when the digestive tract was most active. The conclusion is drawn that the leukocytosis is elicited by the action of ferments in the digestive juices, the pancreatic and intestinal juices; during exercise these juices are forced out into the blood stream in larger proportions. The fluctuations average about the same as with the leukocytosis of digestion, sometimes one and sometimes the other being highest. The bibliography on this special research is appended, including a number of theses both at Kazan and Petrograd. All are in Russian except an early communication from Boldireff in the *Ergebnisse der Physiologie*, 1911. Some have been summarized in these columns, as, in THE JOURNAL, Oct. 9, 1915, p. 1316, Nikulin's article on periodical vomiting.

### Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

*November 18, 1916, II, No. 21, pp. 1849-1920*

85 *Snapping Hip. (Over de veerende heup, ziekte van Perrin-Ferraton.) G. Kapsenberg.—p. 1849.
86 The Visual Field as Guide to Operating in Glaucoma. (Gezichtsveldonderzoek en glaucoomoperatie.) D. J. Waardenburg.—p. 1866.
87 *Urine Containing Indigo Red. (Indigoroodhoudende urine.) L. de Jager.—p. 1873.
88 *Present Status of Prophylaxis of Scarlet Fever. (De tegenwoordige roodvonkbestrijding.) H. G. Ringeling.—p. 1874.

85. **Snapping Hip.**—Kapsenberg discusses with illustrations the mechanism of typical and atypical snapping hip, and reports a few cases to show the different factors that may be involved. In the typical form it is caused by the abnormally taut fasciogluteal fibers springing over the major trochanter. The jerk of the snap is accompanied by a click. The snapping can be done voluntarily, in which case there is no pain, or the snapping occurs automatically and is usually accompanied by some pain. The snapping may be from the iliopsoas muscle, above the greater trochanter. In a case in his own practice a young man had fallen on the right buttock and there was pain in the region and hip joint and some stiffness in the leg but nothing abnormal could be detected to explain the pain in the buttock when the hip joint was moved and the snap when this thigh was flexed or extended. The jerk and snap were most pronounced as the man reclined and moved his hip joint, the jerk being felt through the whole leg. The click seemed to come from the hip joint. It resembled the noise made when a reducible dislocation is reduced. The movements of the leg were normal at all times, but in running or climbing stairs the snapping phenomenon occurred occasionally. There was no snapping across the greater trochanter, but a distinct jerking movement could be seen in and felt in the tissues close to the anterior superior iliac spine, in front of the attachment of the sartorius muscle. Roentgenoscopy showed apparently normal conditions, but a very taut tendon was found deep below the surface. It was evidently responsible for the snapping as it moved to and fro across a bony projection. The tendon was about 1 cm. broad and evidently belonged to the iliopsoas muscle. It was severed and the upper stump sprang back out of sight. The snapping was cured at once, but the man still has some pain in the region and later the hip joint and knee on the other side have become painful, showing a general tendency to joint troubles. This tendency may have been responsible for some change in the bone which may have caused indirectly the snapping of the tendon.

87. **Indigo Red in the Urine.**—De Jager recently had a specimen of urine sent in for examination which contained albumin and, supposedly, blood as it was reddish, but no red corpuscles could be detected in the sediment and the reaction was alkaline. The patient was an unmarried woman of 68. The guaiac and benzidin tests for blood gave negative findings, and other tests proved the coloring matter to be indigo red. He thinks it liable that this has sometimes been mistaken for blood.

88. **Hospital Treatment in Prophylaxis of Scarlet Fever.**—Ringeling says that the known cases of scarlet fever in Amsterdam for the months of August, September and October have been in 1912, 1915 and 1916, respectively, 1,566, 673 and 1,147. He has seen return cases develop after 46, 48, 49, 55, 75 and 88 days of hospital treatment of the scarlet fever with every possible means of prophylaxis applied. For this and for other reasons, especially when we reflect that the healthy bacilli carriers cannot be isolated, it seems that not much can be anticipated from hospital treatment of scarlet fever in general prophylaxis of the disease, but the families are thus released from the annoyance of quarantine, which is a great advantage. He warns further that scarlet fever is a treacherous disease. An apparently mild case may have severe complications and may transmit the disease to others in a severe form. The mortality in the recent epidemics has been only 0.32, 0.74 and 2.18 per cent. of the notified cases, and he queries whether the prompt hospital treatment may not have been the decisive factor in this low mortality. In 1915, fully 80 per cent. were taken to the hospital and only 0.74 per cent. died. Statistics from London are cited showing how the mortality of the known cases has dropped from 5.6 per cent. to 2 since 1890, in inverse proportion to the percentage of cases taken to the hospital. This was 42.8 per cent., with a mortality of 5.6 per cent. in 1890, the total number of cases being 3.7 per thousand inhabitants. The figures in 1910 were 85.6 per cent. in the hospital, mortality 2 per cent., the number of known cases being 2.5 per thousand inhabitants. In short, Ringeling declares, progress is to be realized by taking more and more the cases of infectious diseases of all kinds to the hospitals.

### Finska Läkaresällskapets Handlingar, Helsingfors

*September, 1916, LVIII, No. 9, pp. 1297-1470*

89 *Mechanism of Traumatic Rupture of Internal Organs. A. Krogius.—p. 1297.
90 *Subconjunctival Injections of Sodium Citrate in Treatment of Glaucoma. V. Grönholm.—p. 1329.
91 *Treatment of Spontaneous Tuberculous Pneumothorax. A. v. Bonsdorff.—p. 1339.
92 *Hydrosalpinx; Pathologic Anatomy, Etiology, Pathogenesis and Clinical Experiences. B. H. Jägerroos.—p. 1357.

*Supplement, pp. 1-78*

93 *Fibromas, Sarcomas, and Mixed Tumors of the Ovaries and Results of Operative Treatment. (Undersökning öfver läkningsresultaten vid den operativa behandling af desmoida ovarialtumörer.) M. af Heurlin.—p. 1.

89. **Traumatic Rupture of Internal Organs.**—Krogius gives a number of illustrations to show the various types of rupture of the spleen, liver and other organs under the influence of contusions bending or squeezing them. When the force bends the organ, the rupture is on the convex side and runs perpendicularly to the force applied; the edges of the rupture are sharp, and the rupture is more extensive on the surface than below. Rupture from compression runs parallel to the force, and may occur on both sides of the organ. The rupture extends more in the depths than on the surface, and the edges are torn and uneven. These features of rupturing may be useful in criminal cases to determine the character of the force applied. In making tests on the cadaver, the organs must have fluid injected to bring them up to the physiologic tonus.

90. **Sodium Citrate in Treatment of Glaucoma.**—Grönholm's experience was disappointing. He injected the 4.05 or 5.41 per cent. solution of sodium citrate, making thirty-three subconjunctival injections in four cases, including two eyes with inflammatory glaucoma, two with simple glaucoma and two with absolute glaucoma. Pain and swelling followed in the acutely inflamed glaucomatous eyes, but there was no modification in the pressure. In the other cases benefit was apparent, the pressure in some of the eyes returning to normal. But this effect proved transitory. It is possible that this treatment might prove effectual in combination with myotics, but it cannot compete with operative measures.

91. **Spontaneous Pneumothorax in Pulmonary Tuberculosis.**—Bonsdorff concludes from his experience in nineteen cases of this kind that treatment should aim to transform the spontaneous pneumothorax into a seropneumothorax or serothorax, and then, as soon as the fistula has healed, to aspirate the effusion and introduce nitrogen in its place, keeping up the artificial pneumothorax as long as conditions require. This method was applied in three of his cases and proved completely successful in two. In the third case the fistula refused to heal.

92. **Hydrosalpinx.**—Jägerroos' long study of this subject fills sixty-four pages, including two devoted to bibliography. It is based on 100 clinical cases. As conservative operative treatment is the rule, only fifty-eight pathologic anatomic specimens were obtained. There are no especially characteristic symptoms, he says, so that it is almost impossible to determine beforehand the exact nature of the trouble. Conservatism was carried to the extreme, and recent reexamination of seventy of the 100 women showed forty-five entirely cured of all disturbances to date, after salpingotomy. In three cases the hydrosalpinx returned on the other side. In fourteen cases treated with salpingostomy, the results have been entirely satisfactory; in two other cases a tumor developed later on that side. One woman has passed through a normal pregnancy since. In five cases there is still some subjective disturbance although the objective findings are normal.

93. **Ovarian Fibromas and Sarcomas.**—Af Heurlin's profusely and handsomely illustrated monograph is based on 45 ovarian tumors of the fibroma and fibrosarcoma types. He reviews the literature on the subject of desmoid ovarian tumors. The article proceeds from the gynecologic clinic in charge of Engström. The fibromas formed 1.9 per cent. and the sarcomas 3.6 per cent. of the total 688 operative ovarian tumor cases at the clinic. The malignant sarcomas were bilateral in 50 per cent. of these 9 cases, while only 12.5 per cent. of the spindle-cell sarcomas involved both sides. The fibromas never invaded both ovaries. The average age in the spindle-cell sarcoma cases was 47.1 years, while 2 of the other sarcoma patients were between 18 and 19; 2 between 20 and 24; 4 between 35 and 40, and 1 between 40 and 45. One of the fibroma patients had exophthalmic goiter and died from embolism the second week. The others are all in good health from four to nineteen years since the operation. The mortality in the spindle-cell sarcoma cases was 12.5 per cent. A similar proportion are living four years since the operation, while 50 per cent. are living after an interval of from six to twenty-three years. In the 9 malignant sarcoma cases, 33 per cent. died soon after the operation, and only 2 are still living, one only recently operated on, the other after an interval of twenty-two months. The others died from recurrence in from two to fourteen months. These types of ovarian tumors are encountered, according to his statistics, in a ratio of one to every 20,000 inhabitants. One case per year of ovarian fibroma would correspond to 1,000,000 inhabitants; one spindle-cell sarcoma to 800,000, and one malignant sarcoma to 1,500,000. These figures are based on the population of Finland in 1914, namely 3,269,253. This is a lower percentage than in Sweden and Denmark.

## Ugeskrift for Læger, Copenhagen

*November 23, 1916, LXXVIII, No. 47, pp. 2051-2076*

94 *Rupture of Spleen from Contusion. (To Tilfælde af subkutan traumatisk Miltruptur.) C. Tage-Hansen.—p. 2051.

95 *Phototherapy in Danish Sanatoriums. (Lysbehandling af Tuberkulose paa nogle jydske Sanatorier.) T. Begtrup-Hansen.—p. 2057.

*November 30, No. 48, pp. 2077-2112*

96 *The Sugar Content of the Blood. (Nogle Bemærkninger om Blodsukkerbestemmelsernes Teknik og nogle Iagttagelser over Blodsukkerets Forhold ved lette Glykosurier.) F. Rydgaard.—p. 2007.

97 Quantitative Determination of Albumin in the Urine. (Nogle Bemærkninger om kvantitativ Bestemmelse af Aeggehvide i Urinen, spec. om "Esbachs Metode" og dens Modifikation ved Gad-Andresen.) E. Biering-Petersen.—p. 2089.

94. **Rupture of the Spleen.**—In Hansen's two cases both of the patients recovered after removal of the spleen which had been split into two parts. The symptoms of the intraperitoneal hemorrhage in one case were all in the right side, which was misleading, but was explained by the fact that the left side of the bed stood against the wall, so the lad of 16 had to lie on his right side as there was much vomiting and collapse. The other patient, a woman of 38, had signs of peritoneal irritation but it was not severe and the trauma seemed insignificant and the general condition kept good. Possibly the morphin that had been given had contributed to this. There was much less loose blood than in the first case, although the operation came in three and a half hours in this and not until after twenty-four hours in the second case, the bleeding in the latter being intermittent. Adhesions may check it; as these break up, more blood escapes. An enlarged spleen ruptures more readily; in these cases the spleen weighed 160 and 280 gm. In Berger's compilation of 168 cases, 50 per cent. died within the first hour and 25 per cent. between the second and the tenth.

95. **Phototherapy of Tuberculosis in Danish Sanatoriums.**—Hansen reviews the work being done with arc lights and mercury vapor lamps in the various sanatoriums, including the one in his own charge. He soon abandoned the arc lamps as uncontrollable, and now works exclusively with the mercury vapor lamp. The general impression is favorable for superficial accessible lesions but not for others.

96. **Determination of Sugar Content of the Blood.**—Rydgaard describes the technic with which it is possible to determine the absolute values as well as the relative in testing the sugar content of the blood. He uses Bang's second micromethod—the uranyl acetate method—as this is more exact than the precipitation with salt solution method. Even with the former, a number of minor technical points must be observed to get satisfactory results, as he describes in detail from his own experience. In connection therewith he discusses the sugar content of the blood with slight glycosuria, citing some cases of the latter with diametrically opposite sugar content of the blood and clinical course. He queries whether they represent different morbid entities or are merely various manifestations of diabetes mellitus. In the one type the glycosuria was a casual discovery and it did not seem to depend on the diet, not increasing on a full diet and not decreasing on the antidiabetic diet, while the sugar content of the blood was within normal range and there was nothing otherwise to suggest diabetes. In the case of the other type, the glycosuria responded promptly to dietetic measures but the sugar content of the blood corresponded to that of actual diabetes throughout the tests.